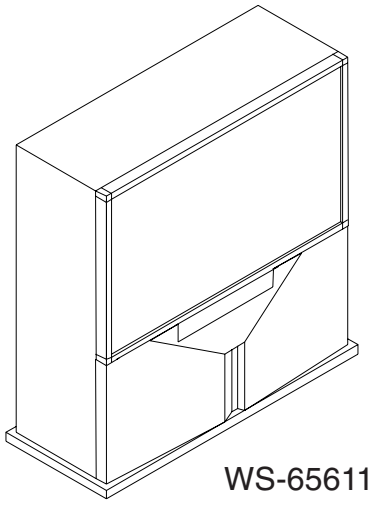
2002

MITSUBISHI ELECTRIC

# Service Manual

**PROJECTION TELEVISION**
**V21 / V21+ / V21++ CHASSIS**



WS-65611

| V21 MODELS | V21+ MODELS | V21++ MODELS |
|---|---|---|
| WS-48511 | WS-65611 | WS-55711 |
| WS-55511 | | WS-65711 |
| WS-65511 | | WS-65712 |
| WS-B55 | | WS-73711 |

**CAUTION:**
Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in this manual.

## SPECIFICATIONS

- **Power Input** : AC 120V, 60Hz
- **Power Usage** : 275W (All but WS-73711)
  300W (WS-73711 only)
- **Frequency Range** : VHF 54 ~ 470MHz
  UHF 470 ~ 806MHz
- **Antenna Input** : VHF/UHF 75Ω unbalanced
  2 - NTSC
  1 - ATV/QAM
- **CRT Size** : [7 inches]
  : [9 inches] WS-73711 only
- **High Voltage** : 32.0kV (at 0A)
- **Cabinet Weight and Demensions**

| Model | Weight | Height | Width | Depth |
|---|---|---|---|---|
| **WS-48511** | 175.5 lbs. | 49" | 44.5" | 24" |
| **WS-55511** | 238 lbs. | 50.3" | 50.6" | 28" |
| **WS-55711** | 266 lbs. | 50.3" | 50" | 28" |
| **WS-65511** | 337 lbs. | 61.9" | 59" | 28.1" |
| **WS-65611** | 336.5 lbs | 61.9" | 59" | 28.1" |
| **WS-65711** | 356 lbs | 61.6" | 58.2" | 28" |
| **WS-65712** | 251 lbs. | 61.7" | 58.2" | 28.4" |
| **WS-73711** | 410 lbs | 65.7" | 65.2" | 30" |
| **WS-B55** | 238 lbs. | 50.3" | 50.6" | 28" |

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.
- AC-3® is a registered trademark of Dolby Laboratories, Inc.

- **Speakers (8 Ohms 10W)**
  [WS-48511] :2 - 5" round
  [WS-B55 / WS-55511 / WS-65511 / WS-65611]
  :2 - 6" round
  [WS-55711 / WS-65711 / WS-73711]
  :2 - 6.5" round, 2 - 3" tweeters
  [WS-65712] :2 - 7" oval, 2 - 3" tweeters
- **Input Level** : VIDEO IN JACK (RCA Type)
  1.0Vp-p 75Ω unbalanced
  : AUDIO IN JACK (RCA Type)
  -4.7dBm 43kΩ unbalanced
  : S-VIDEO IN JACK
  (Y/C separate type)
  Y:1.0 Vp-p C:0.286Vp-p(BURST)
  75Ω unbalanced
  : COMP / Y, Cr, Cb (RCA Type)
  Y: 1.0 Vp-p Cr, Cb: 700mVp-p
  : ATV / Y(G), Pr(R), Pb(B), H, V
  Y: 1.0Vp-p with sync 75Ω (BNC)
  Pr, Pb: 700mV 75Ω
  H, V: 3.0Vp-p 75Ω
  : VGA / R,G,B,V,H (15 pin D)
- **Output Level** : VIDEO OUT JACK (RCA Type)
  1.0Vp-p 75Ω unbalanced
  : AUDIO OUT JACK (RCA Type)
  -4.7dBm 4.7kΩ unbalanced
- **Digital Interface**
  : IEEE-1394 I/O Jacks
  : AC-3® Digtal Audio Output

**MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.**
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# INTRODUCTION

This service manual provides service instructions for the V21, V21+ and V21++ PTV chassis types. The specific models for each chassis type are listed below. Service personnel should read this manual thoroughly before servicing these chassis.

| V21 Chassis | V21+ Chassis | V21++ Chassis |
|---|---|---|
| WS-48511 | WS-65611 | WS-55711 |
| WS-55511 | | WS-65711 |
| WS-65511 | | WS-65712 |
| WS-B55 | | WS-73711 |

This service manual includes:

1. Assembly and disassembly instructions for the front and rear cabinet components.
2. Servicing of the Lenticular Screen and Fresnel Lens.
3. Servicing printed circuit boards (PCBs).
4. CRT replacement procedure.
5. Electrical adjustments.
6. Chip parts replacement procedures.
7. Circuit path diagrams.

The parts list section of this service manual includes:

1. Cabinet and screen parts.
2. Electrical parts.

Schematic and block diagrams of the above listed models are included in this service manual for better understanding of the circuitry. PCB drawings are also included for easy location of parts and test points.

# PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading on the schematic diagram and by **bold type** in the parts list of this service manual. **The replacement for any safety part should be identical in value and characteristics.**

# SAFETY PRECAUTIONS

**NOTICE:** Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

**WARNING:**

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver's power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
2. Do not install, remove or handle the picture tubes in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

**X-Radiation warning**

The surface of the cathode ray tubes (CRTs) may generate X-Radiation, so take proper precautions when servicing. It is recommended that a lead apron be used for shielding while handling the CRT. Use this method if possible.

When replacing the CRTs, use only the designated replacement part since it is a critical component with regard to X-Radiation. High voltage must be set as prescribed under the section titled Electrical Adjustments.

**Leakage current check**

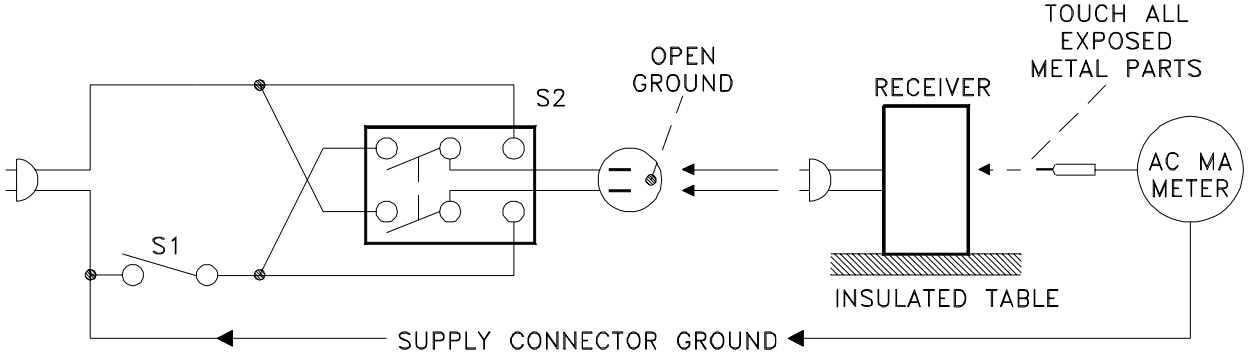
Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. *Cold Check*

   With the alternating current (AC) plug removed from the AC source, place a jumper across the two AC plug prongs. Connect one lead of an ohm meter to the AC plug and touch the other lead to each exposed metal part (i.e. antennas, handle bracket, metal cabinet, screw heads, metal overlay, control shafts, etc.), particularly any exposed metal part that has a return path to the chassis. The resistance of the exposed metal parts having a return path to the chassis **should be a minimum of 1Mega Ohm**. Any resistance below this value indicates an abnormal condition and requires corrective action.

2. *Hot Check ...Use the circuit shown below to perform the hot check test.*

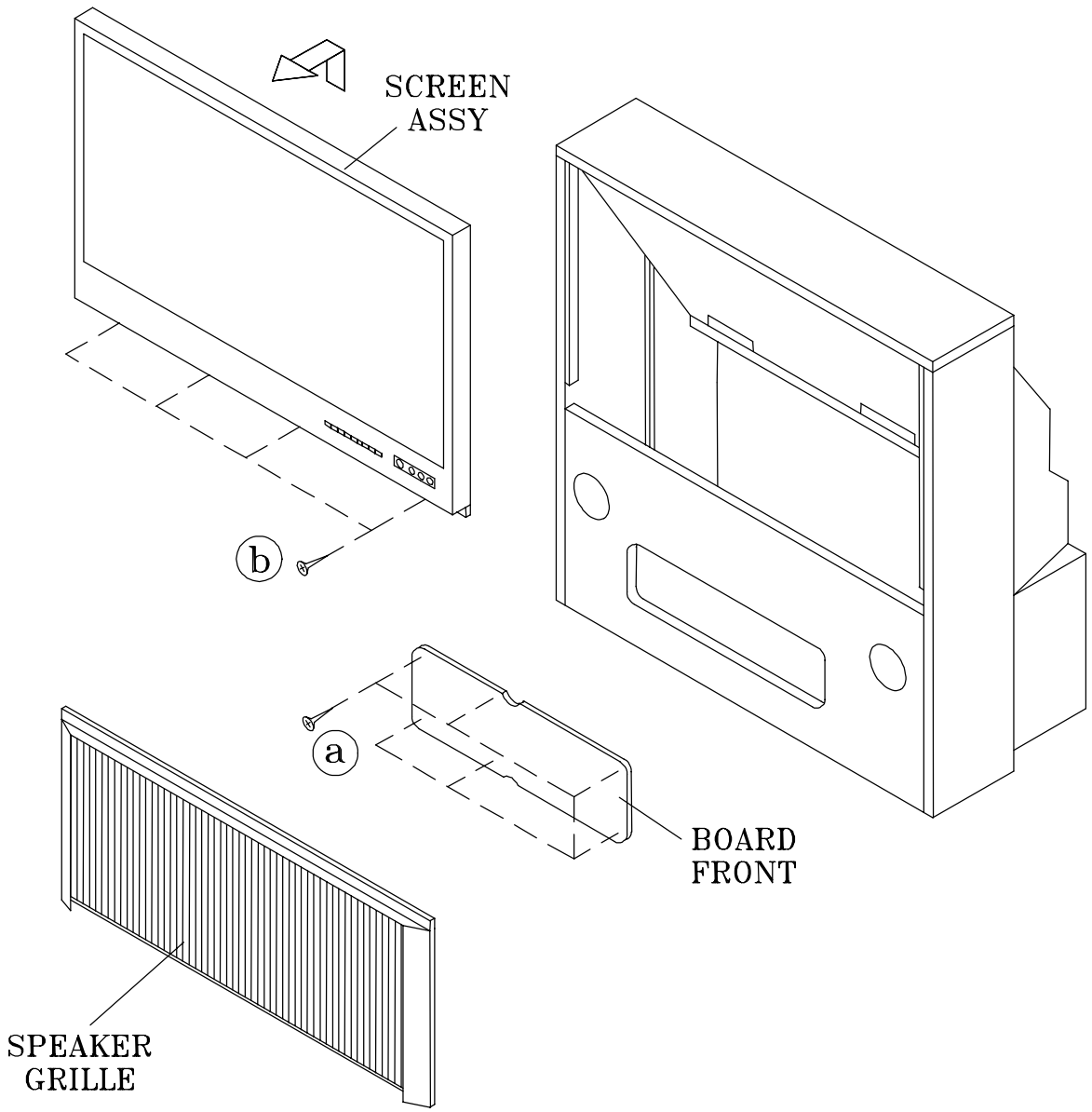
   1. Keep switch S1 open and connect the receiver to the measuring circuit. Immediately after connection, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2.
   2. Close switch S1, energizing the receiver. Immediately after closing switch S1, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2. Repeat the current measurements of items 1 and 2 after the receiver has reached thermal stabilization. **The leakage current must not exceed 0.5 milliampere (mA).**



# CABINET DISASSEMBLY (FRONT VIEW)

## WS-48511

***Refer to the Parts List for Part Numbers**



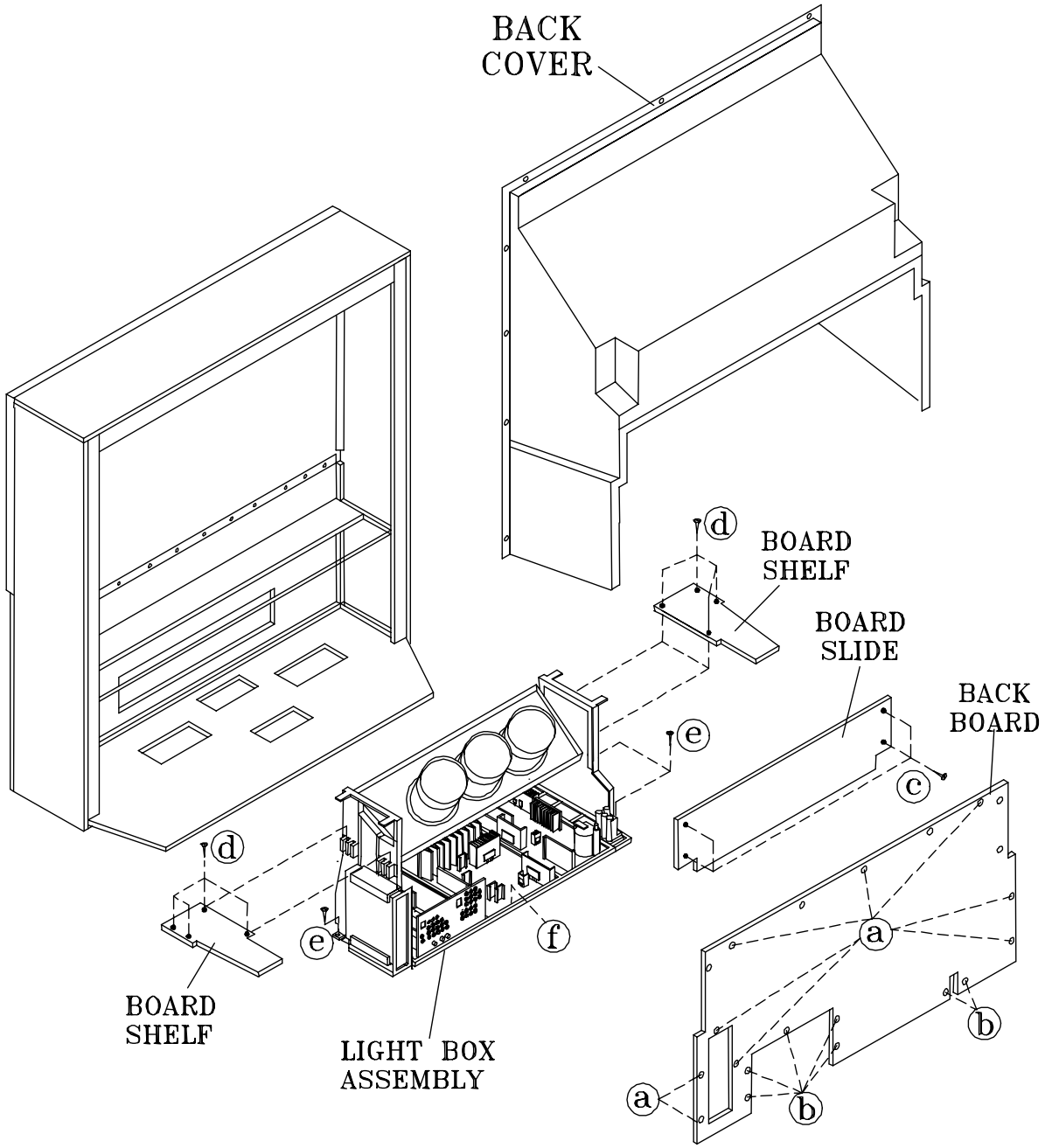

***Front Cabinet Disassembly***

1. Remove the Speaker Grille by pulling forward.
2. Remove the Board Front by removing screws (a).
3. Remove the screws (b) holding the Screen Assembly.
4. Lift the Screen Assembly up and away from the cabinet.

# CABINET DISASSEMBLY (REAR VIEW)

## WS-48511

***Refer to the Parts List for Part Numbers**



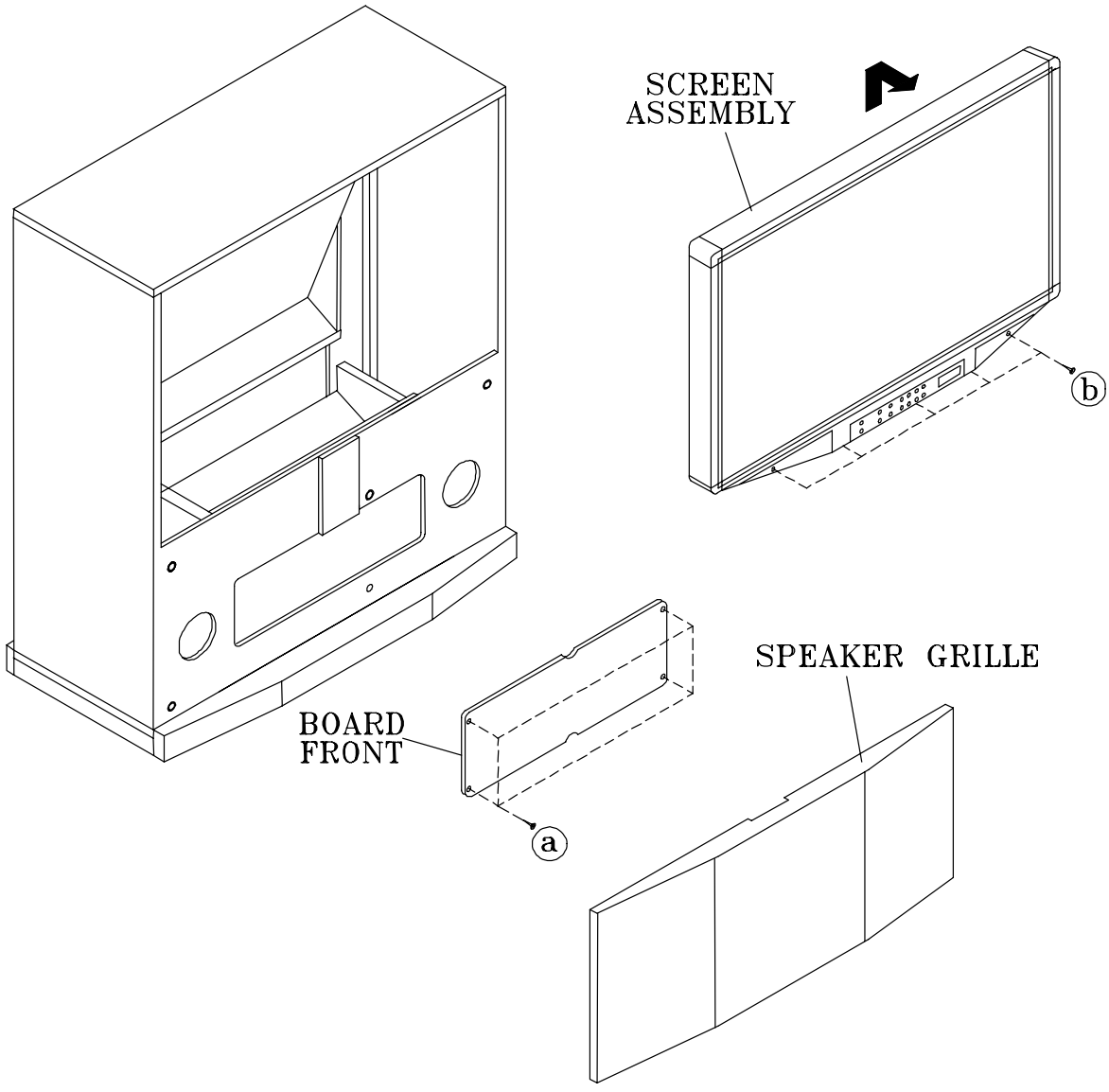

***Rear Cabinet Disassembly***

1. Remove the Back Board by removing screws (a)and (b)).
2. Remove 4 screws (c) securing the Board Slide.
3. Remove 4 screws (d) holding each Board Shelf.
4. Be certain that all cables and connectors between the Light Box Assembly and external items are disconnected (e.g. speaker plugs, etc.).
5. Remove 3 screws (c) and screw (f). Then slide the Light Box Assembly from the cabinet.

# CABINET DISASSEMBLY (FRONT VIEW)

## WS-B55 / WS-55511 / WS-65511

***Refer to the Parts List for Part Numbers**



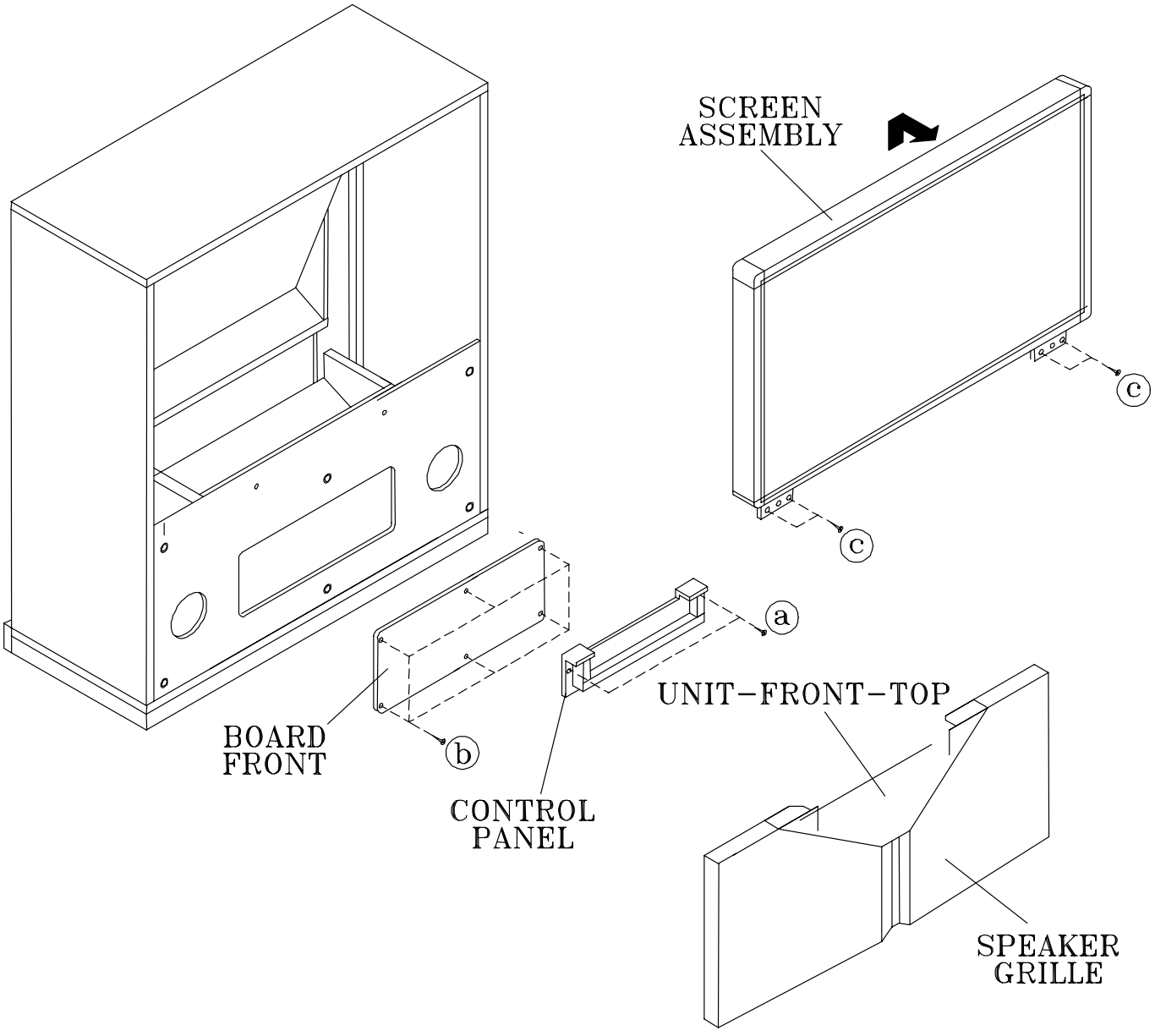

***Front Cabinet Disassembly***

1. Remove the Speaker Grille by pulling forward.
2. Remove the Board Front by removing 4 screws (a).
3. Remove the 4 screws (b) holding the Screen Assembly.
4. Lift the Screen Assembly up and away from the cabinet.

# CABINET DISASSEMBLY (FRONT VIEW)

## WS-65611

***Refer to the Parts List for Part Numbers**



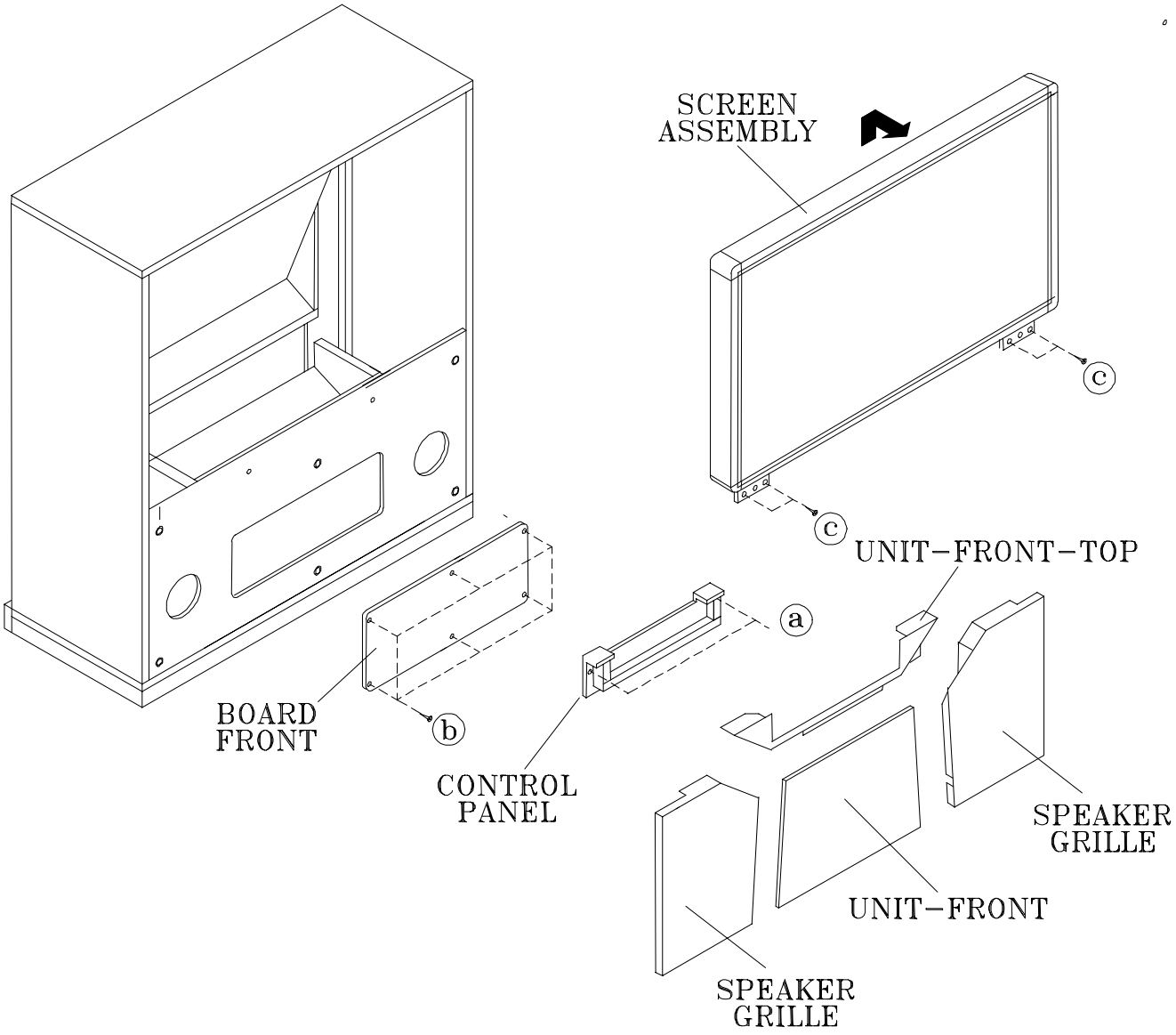

***Front Cabinet Disassembly***

1. Remove the Speaker Grille by pulling forward.
2. Remove the Board Front by removing screws (b)
3. Remove the Control Panel by removing two screws (a).
4. Remove the four screws (c) holding the Screen Assembly.
5. Lift the Screen Assembly up and away from the cabinet.

# CABINET DISASSEMBLY (FRONT VIEW)

## WS-55711 / WS-65711 / WS-73711

***Refer to the Parts List for Part Numbers**



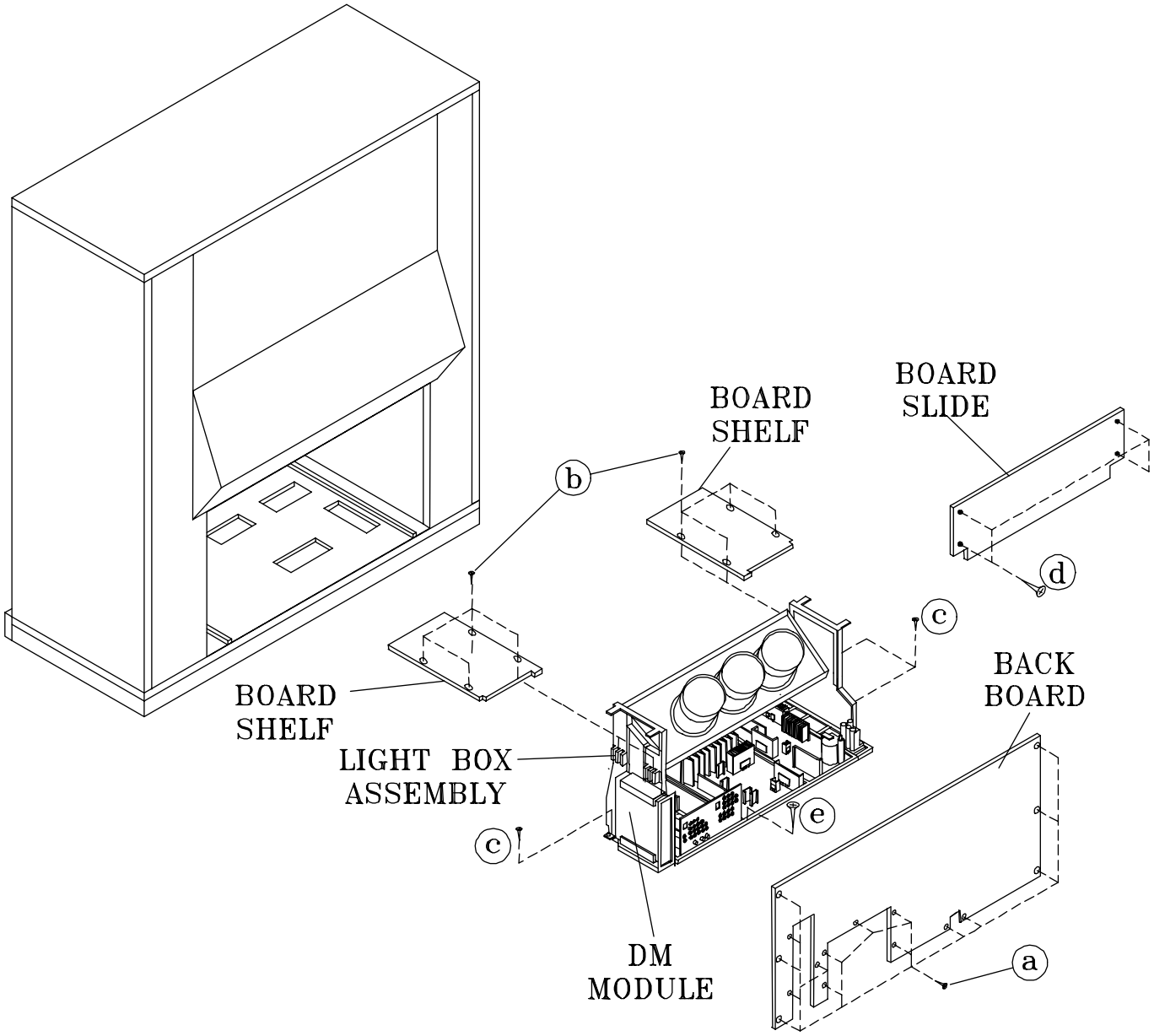

***Front Cabinet Disassembly***

1. Remove the Speaker Grilles and Unit Front by pulling forward.
2. Remove 2 screws (a) to remove the Control Panel.
3. Remove the Board Front by removing 4 screws (b).
4. Remove the 4 screws (c) holding the Screen Assembly.
5. Lift the Screen Assembly up and away from the cabinet.

# CABINET DISASSEMBLY (REAR VIEW)

## WS-B55 / WS-55511 / WS-65511 / WS-65611/ WS-55711 / WS-65711 / WS-73711

***Refer to the Parts List for Part Numbers**



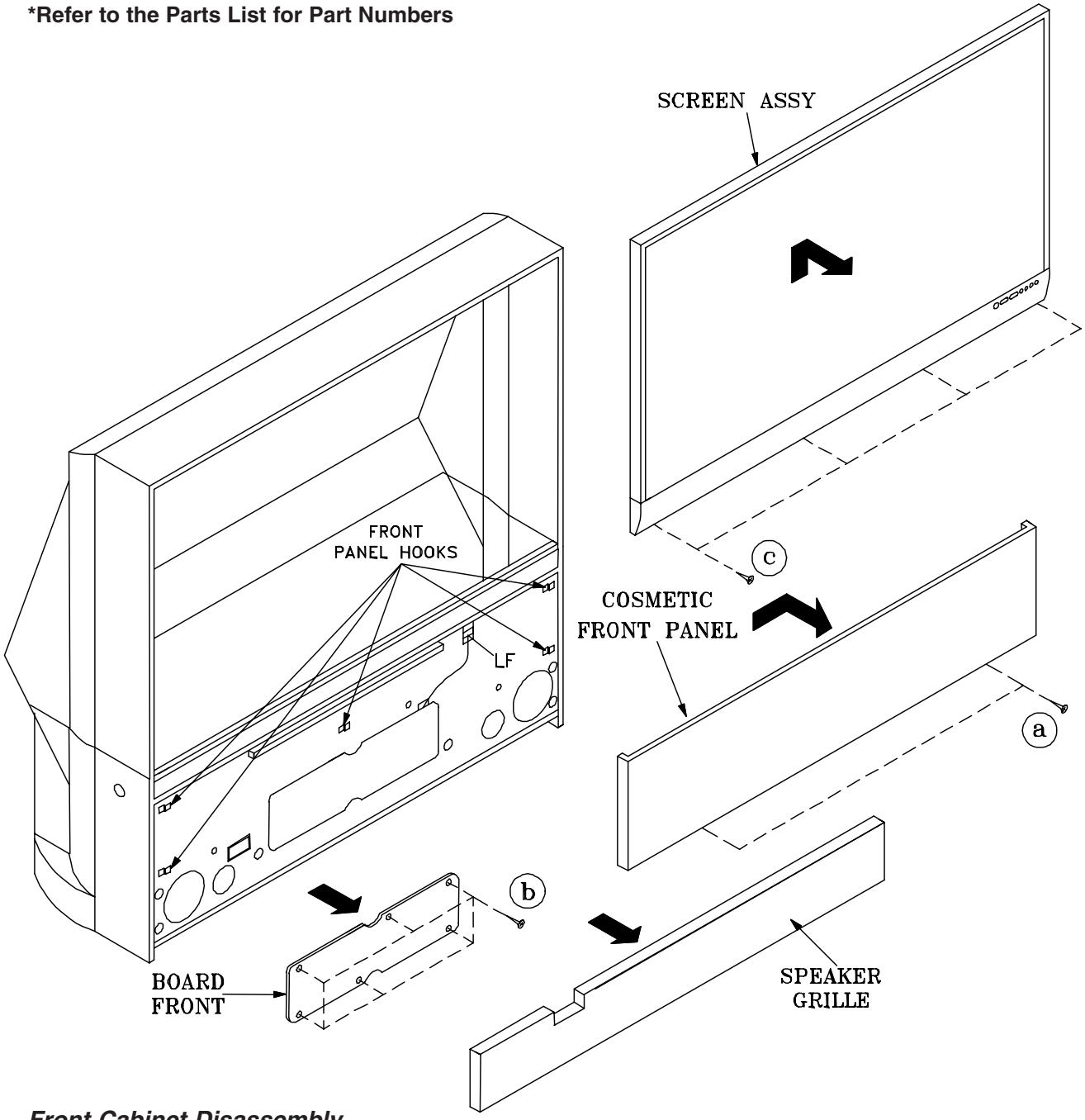

**Rear Cabinet Disassembly**

1. Remove screws (a) holding the Back Board.
2. Remove 4 screws (a) holding the Board Slide
3. Remove the 4 screws (b) holding each Board Shelf.
4. Remove screw (e) and 3 screws (c) securing the Light Box Assembly.
5. Be certain that all cables and connectors between the Light Box Assembly and external items are disconnected (e.g. speaker plugs, etc.).
6. Slide the Light Box out the rear of the Cabinet.

# CABINET DISASSEMBLY (FRONT VIEW)

## WS-65712

***Refer to the Parts List for Part Numbers**



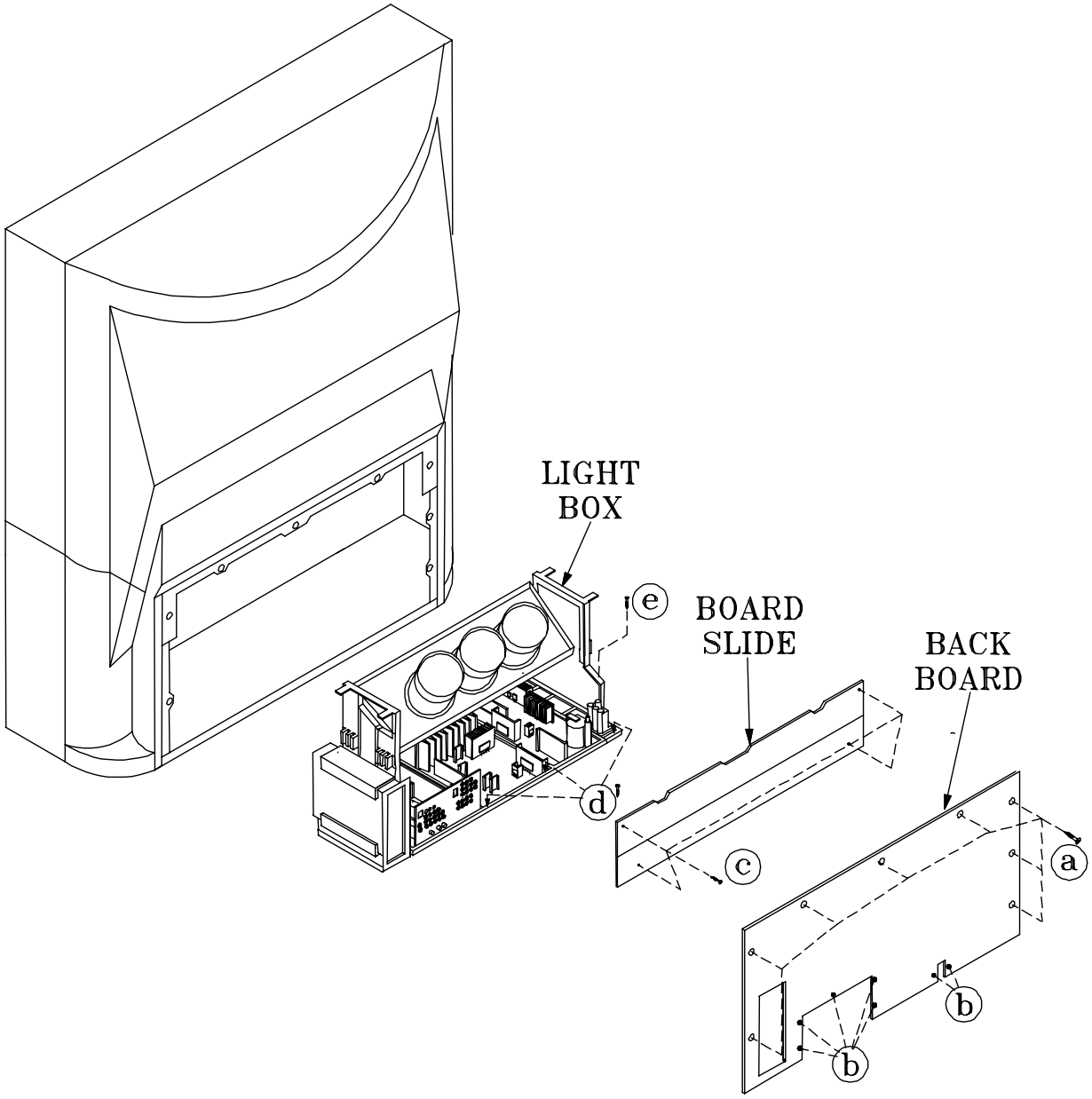

***Front Cabinet Disassembly***

1. Remove the Speaker Grille by pulling forward.
2. Remove 2 screws (a) securing the Front Panel.
3. Slide the Front Panel 1/2 inch to the right, then pull away from the TV.
4. Remove 6 screws (b) to remove the Board Front.
5. Unplug the LF connector.
6. Remove the 4 screws (c) securing the Screen Assembly.
7. Lift the Screen Assembly up and away from the cabinet.

# CABINET DISASSEMBLY (REAR VIEW)

## WS-65712

***Refer to the Parts List for Part Numbers**




**Rear Cabinet Disassembly**

1. Remove screws (a) and (b) holding the Back Board.
2. Remove the 4 screws (c) holding each Board Slike.
3. Remove the 3 screws (c) and screw (e) securing the Light Box Assembly.
4. Disconnect cabling to the front panel (Control Panel, Speakers, Inputs, etc.)
4. Slide the Light Box out the rear of the Cabinet.

# SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

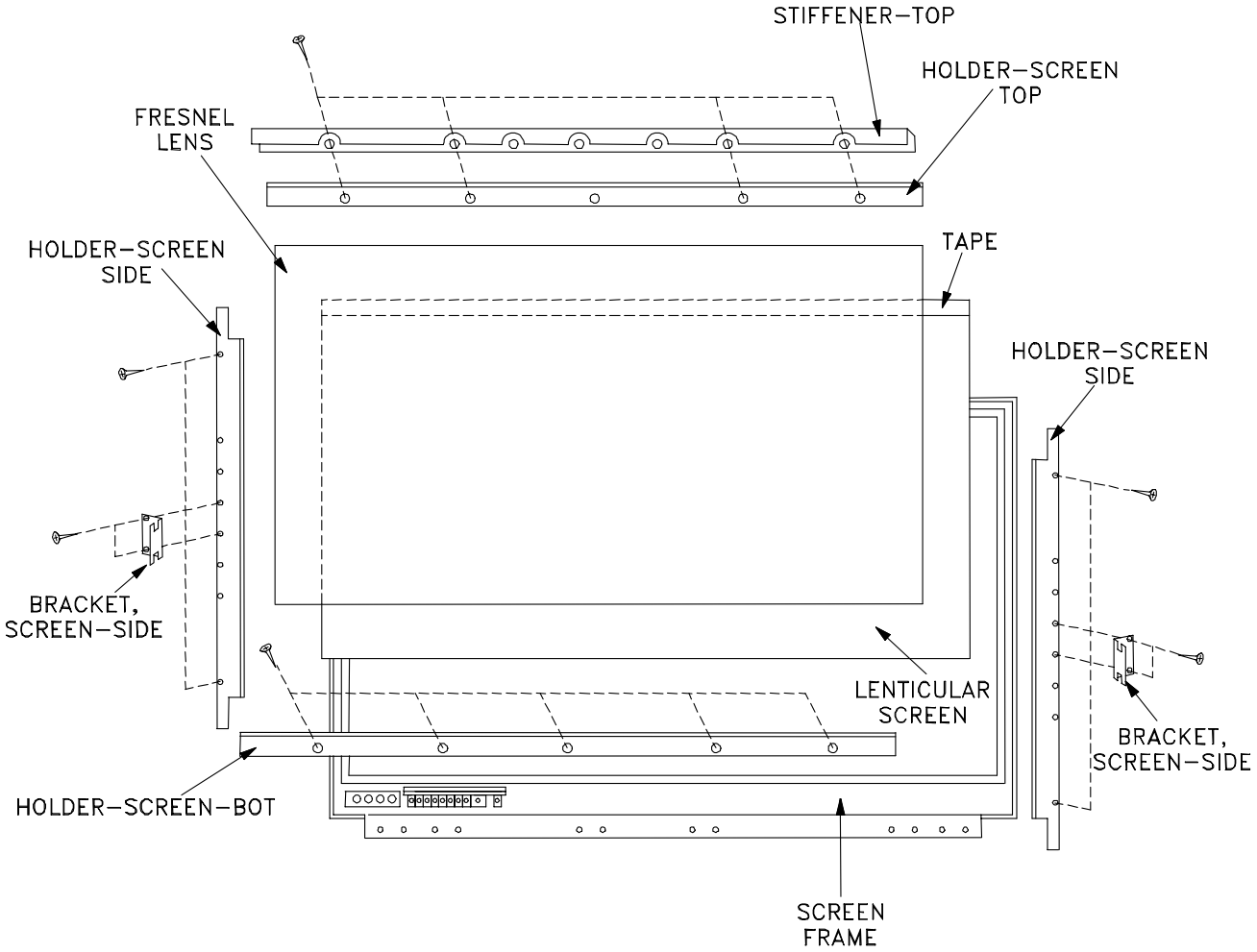
**CAUTION:** **Wear gloves** when handling the Lenticular Screen and Fresnel Lens. This prevents cuts and finger prints. **Do not place Fresnel Lens in the sun**. This may cause fire and heat related injuries.

## WS-48511

### Lenticular Screen and Fresnel Lens Removal

1. Remove the screen assembly shown in the Cabinet Disassembly procedure.
2. Remove the Top, Bottom and Side Screen Holders.
3. Carefully lift the Lenticular Screen and Fresnel Lens combination from the Screen Frame assembly.

**Note:** When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw drive, and remove the pressure sensitive double sided tape.



# SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

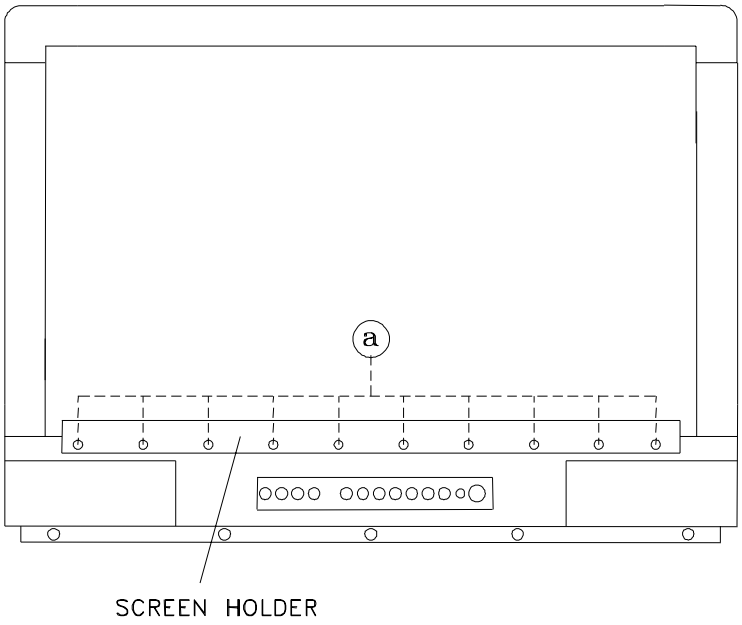
**CAUTION:** **Wear gloves** when handling the Lenticular Screen and Fresnel Lens. This prevents cuts and finger prints. **Do not place Fresnel Lens in the sun**. This may cause fire and heat related injuries.

## WS-B55 / WS-55511 / WS-65511

### Lenticular Screen and Fresnel Lens Removal

1. Remove the screen assembly shown in the Cabinet Disassembly procedure.
2. Remove the screws (a) securing the Screen Holder.
3. Slide the Lenticular Screen and Fresnel Lens from the Screen Frame.

**Note:** When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw drive, and remove the pressure sensitive double sided tape.



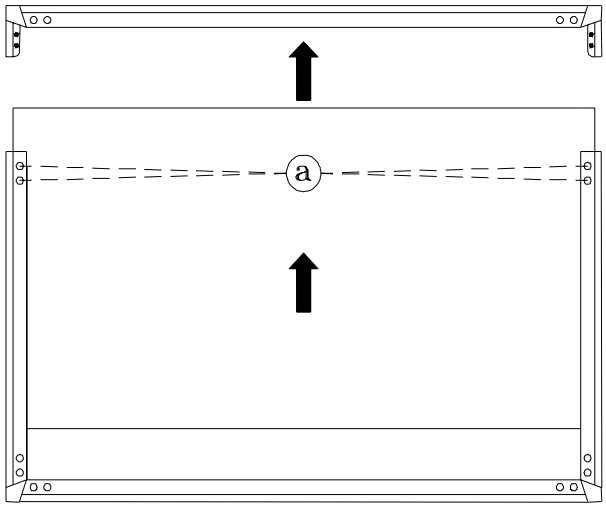
# SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

**CAUTION:** **Wear gloves** when handling the Lenticular Screen and Fresnel Lens. This prevents cuts and finger prints. **Do not place Fresnel Lens in the sun**. This may cause fire and heat related injuries.

## WS-55711 / WS-65611 / WS-65711 / WS-65712 / WS-73711
## Lenticular Screen and Fresnel Lens Removal

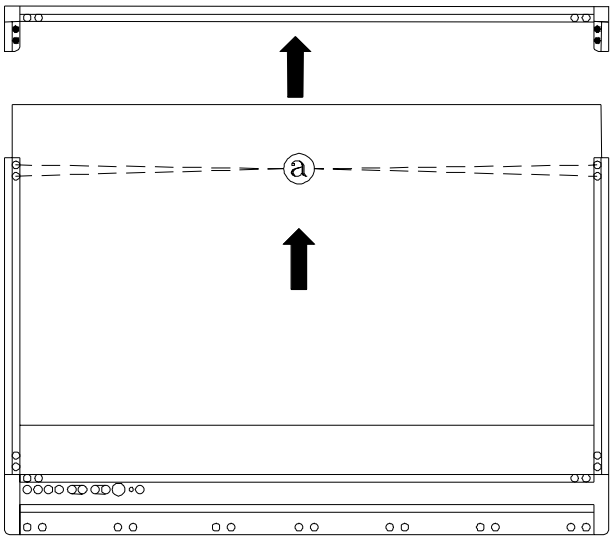
1. Remove the screen assembly shown in the Cabinet Disassembly procedure.
2. Remove the Screen Frame top section by removing 4 screws (a).
3. Carefully grasp the Lenticular Screen and Fresnel Lens combination and pull upward and out of the Screen Frame Assembly.

**Note:** When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw drive, and remove the pressure sensitive double sided tape.




**WS-55711**
**WS-65611**
**WS-65711**
**WS-73711**

Rear View




**WS-65712**

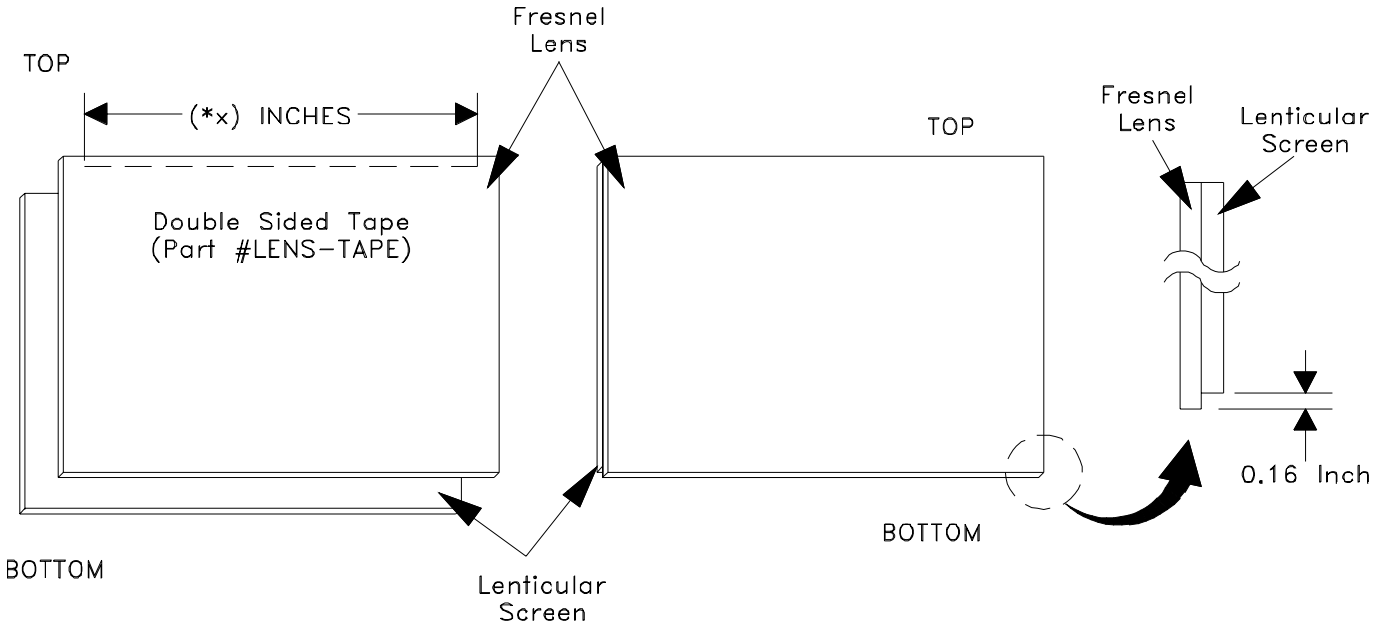
Rear View

# SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

## 2. Lenticular Screen and Fresnel Lens Installation.

**Note:** Store the Lenticular Screen and Fresnel Lens in a cool dry place. High humidity may deform the Lenticular Screen and Fresnel Lens.

1. Apply double coated tape (Part # LENS-TAPE) along the top front edge of the Fresnel Lens as shown below. Refer to the Table below for proper tape length.
2. Place the Fresnel Lens on top of the Lenticular Screen and apply pressure at the top edge to bond them together as shown below.




| Model | Screen Size | Tape Length |
|---|---|---|
| WS-48511 | 48" | 41.76" |
| WS-B55 | 55" | 47.8" |
| WS-55511 | 55" | 56.5" |
| WS-55711 | 55" | 56.5" |
| WS-65511 | 65" | 56.5" |
| WS-65611 | 65" | 56.5" |
| WS-65711 | 65" | 56.5" |
| WS-65712 | 65" | 56.5" |
| WS-73711 | 73" | 63.51" |

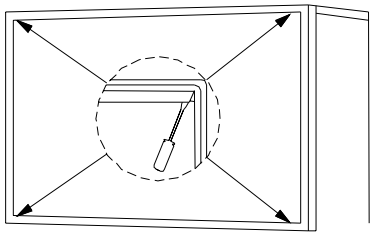
# SERVICING THE DIAMONDSHIELD™

## 1. DiamondShield™ Removal Procedure

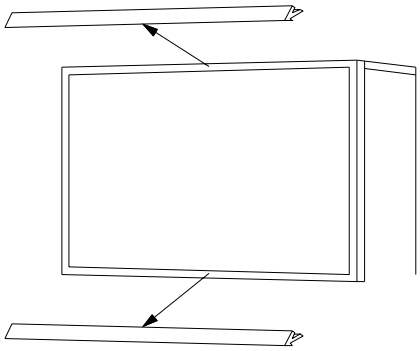
The location of the DiamondShield™ molding clips varies between models, top and bottom, or sides. Use the appropriate disassembly procedure given below.

**Note:** ***Wear gloves when handling the DiamondShield™ to prevent finger prints.***

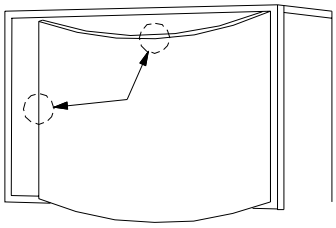
### Top & Bottom Molding Clips



1. Gently insert a small screwdriver between the DiamondShield™ and one end of the clip to pry the clip loose.

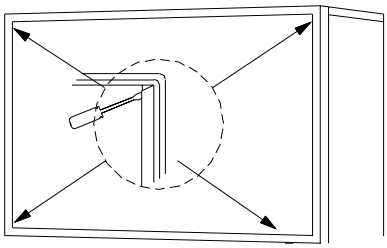


2. Remove both clips by pulling them toward you.

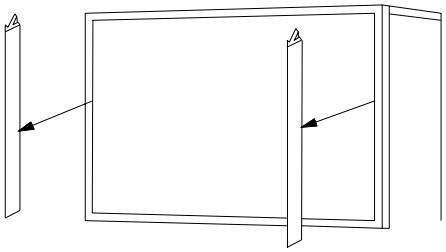


3. Carefully insert a small screwdriver into the gap at the top/center point of the Shield and pull the Shield slightly away from the unit. Place your hands at the points shown and gently bow the Shield toward you and remove from the unit. Then re-install the two clips.

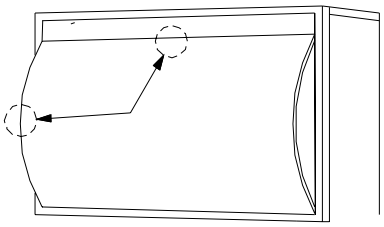
### Side Molding Clips



1. Gently insert a small screwdriver between the DiamondShield™ and one end of the clip to pry the clip loose.



2. Remove both clips by pulling them toward you.



3. Carefully insert a small screwdriver into the gap at the side/center point of the Shield and pull the Shield slightly away from the unit. Place your hands at the points shown and gently bow the Shield toward you and remove from the unit. Then re-install the two clips.

## 2. DiamondShield™ Installation Procedure

*(See the Parts List for DiamondShield™ part numbers)

To install the DiamondShieldTM, reverse the above Removal Procedure.

# CABINET SEPARATION

Mitsubishi 65 and 73 inch Projection TVs have been assembled in two pieces. These pieces may be separated for easier delivery and setup. The cabinet separation procedure requires two persons and varies between models.

## WS-65712 Cabinet Separation Procedure

**Figure 1**

1. Remove the Speaker Grille by pulling forward.
2. Remove the two Front Cover screws (a).
3. To remove the Front Cover, slide to the right approximately 1/2", then pull away from the TV.

**Figure 2**

4. Remove Screw (b) from the front board.
5. Disconnect the LF connector.

**Figure 3**

6. Remove screw (c) on each side of the cabinet.
7. Remove the plastic cover on each side.

**Figure 4**

8. Slide the top of the cabinet top forward.

**Figure 5**

9. Carefully lift the cabinet top until the interlock tabs clear the cabinet bottom

**Figure 6**

10. Carefully place the cabinet top on the floor as shown.

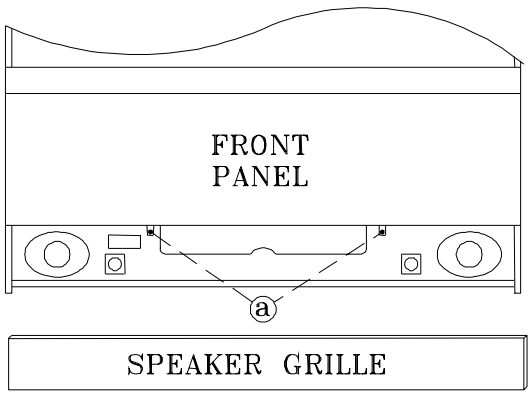



**Figure 1**

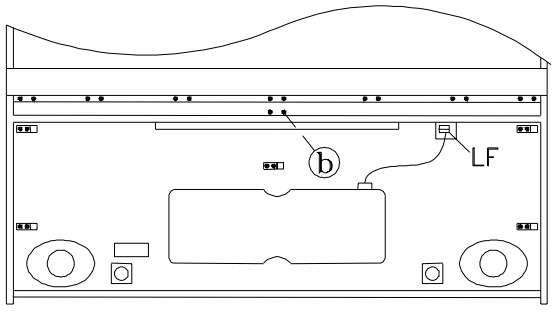



**Figure 2**

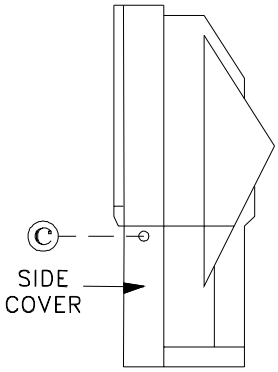



**Figure 3**

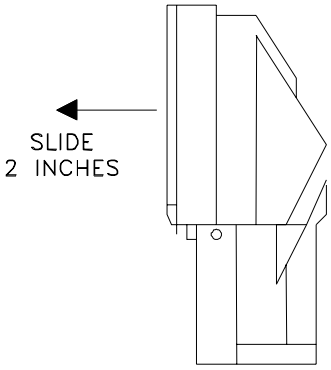



**Figure 4**

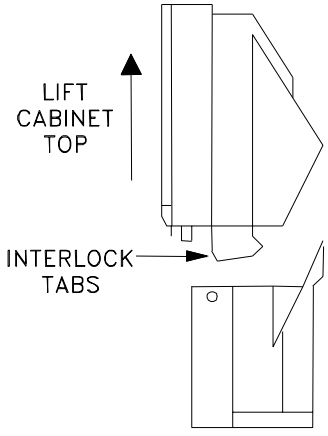



**Figure 5**

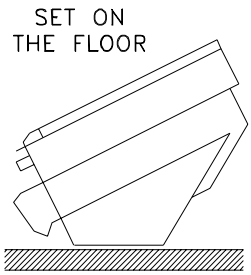
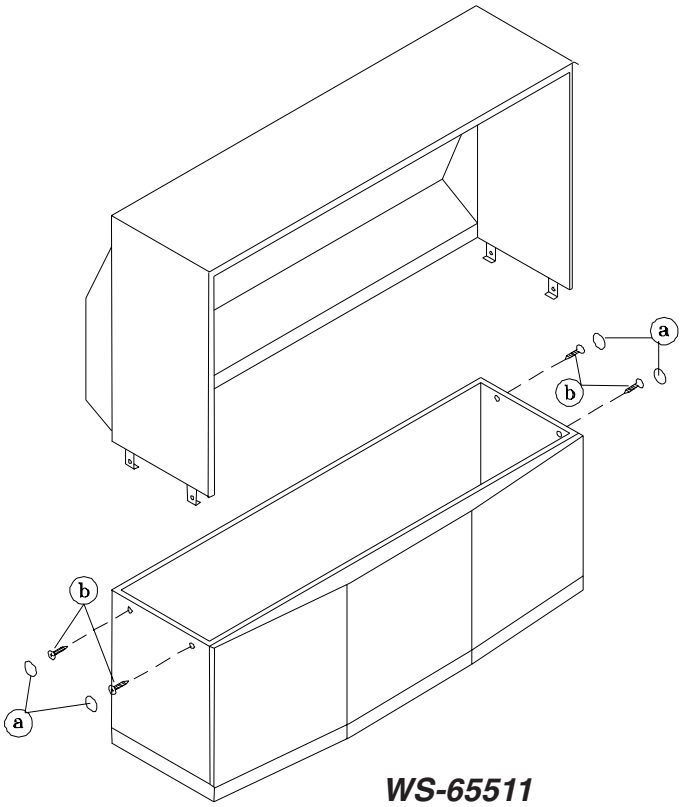



**Figure 6**

# CABINET SEPARATION PROCEDURE
# (WS-65511 / WS-65611 / WS-65711 / WS-73711)

***WS-65511***
***Cabinet Separation Precedure***

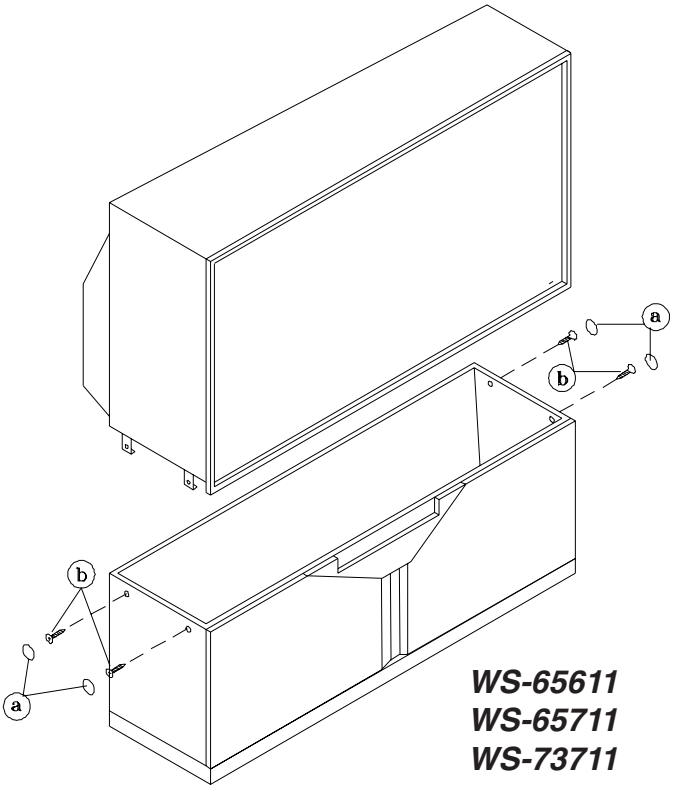
1. Remove the Screen Assembly and disconnect all cable harnesses between the Frame Assembly and the PCB-SIGNAL, refer to Cabinet Front Disassembly.
2. Remove the 4 screw covers (a).
3. Remove 4 screws (b) securing the top and bottom cabinet sections .
4. Carefully lift the cabinet top and place it on the floor.
5. Place the cabinet bottom in the desired location.
6. Reverse the procedure and mount the cabinet top on the cabinet bottom.
7. Reinstall the the Screen Assembly and connect all cable harnesses between the Screen Assembly and the PCB-SIGNAL.




***WS-65511***

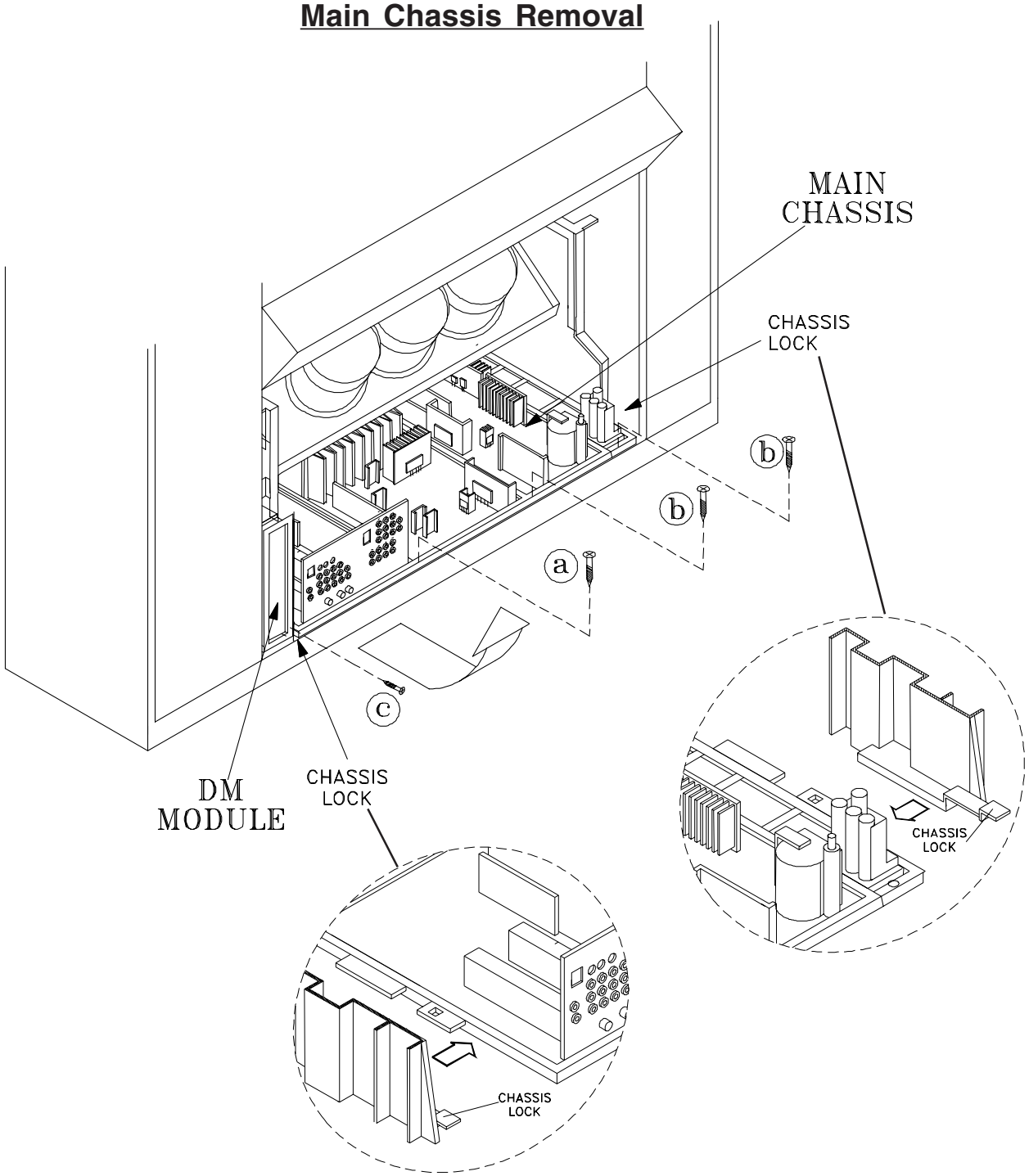
***WS-65611 / WS-65711 / WS-73711***
***Cabinet Separation Precedure***

1. Remove the 4 screw covers (a).
2. Remove 4 screws (b) securing the top and bottom cabinet sections .
3. Carefully lift the cabinet top and place it on the floor.
4. Place the cabinet bottom in the desired location.
5. Reverse the procedure and mount the cabinet top on the cabinet bottom.




***WS-65611***
***WS-65711***
***WS-73711***

# Main Chassis Removal




## Chassis and DM Module Removal

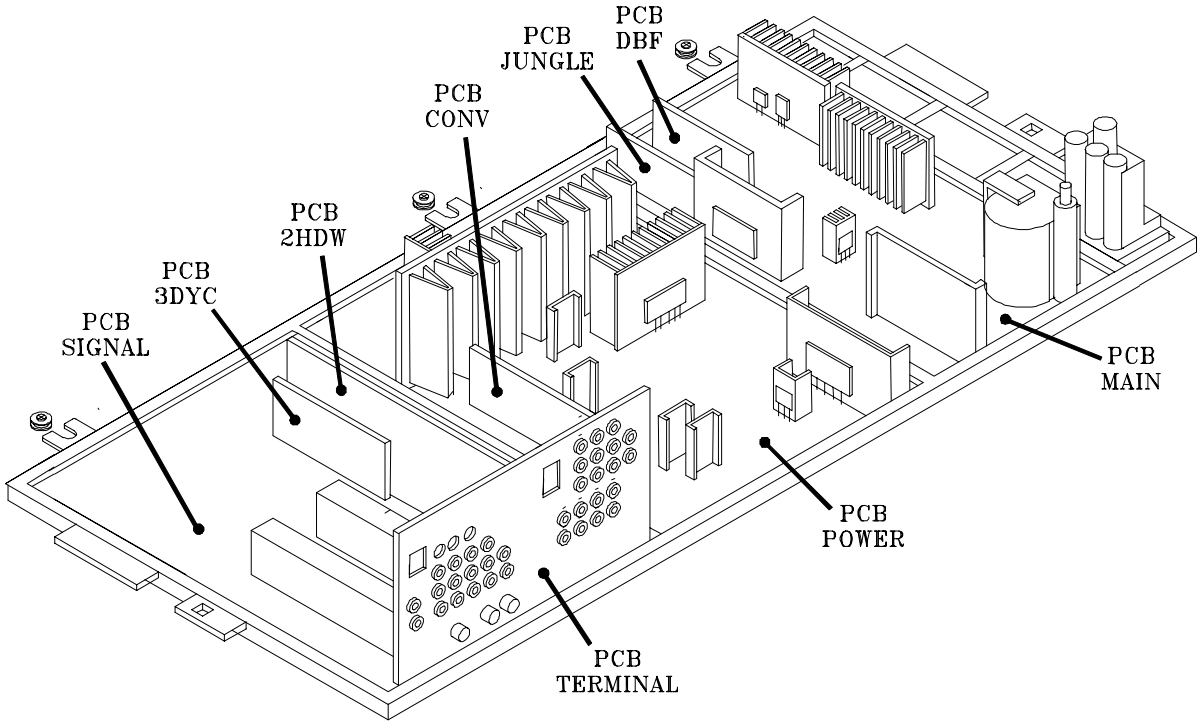
The chassis and DM Module can be removed as a single unit.

1. Undo the cable wire ties to the Front Panel, Speakers, CRTs, etc.
2. Remove screw (a) securing the Main Chassis [and screws (b) in model WS-65712] .
3. Release the Chassis Locks on each side of the chassis.
3. Slide the Chassis and DM Module out the rear of the unit.
5. Tilt upward to access the bottom of the main chassis.

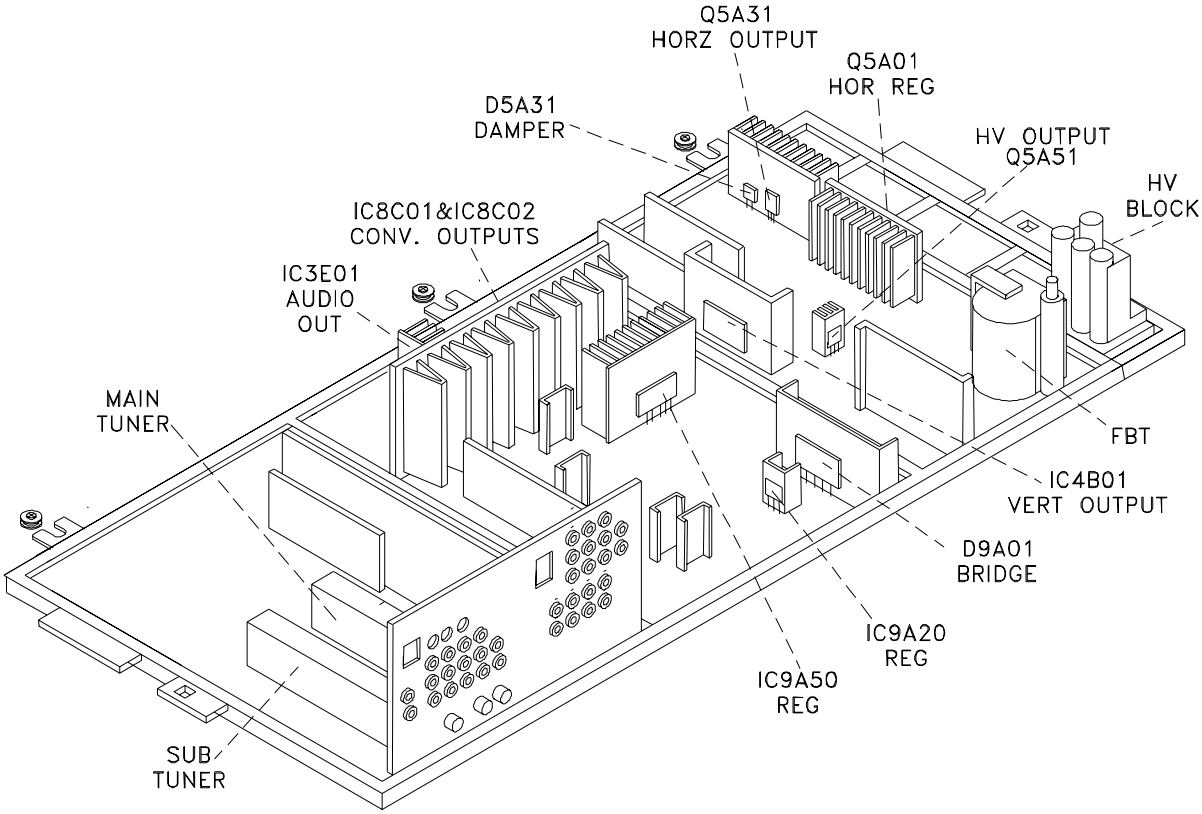
**NOTE:** If the chassis cannot be removed with the DM Module, due to insufficient cable length:

1. Perform Step 1 through 3 above.
2. Remove 1 screw (c).
3. Slide the chassis only out the rear of the unit.

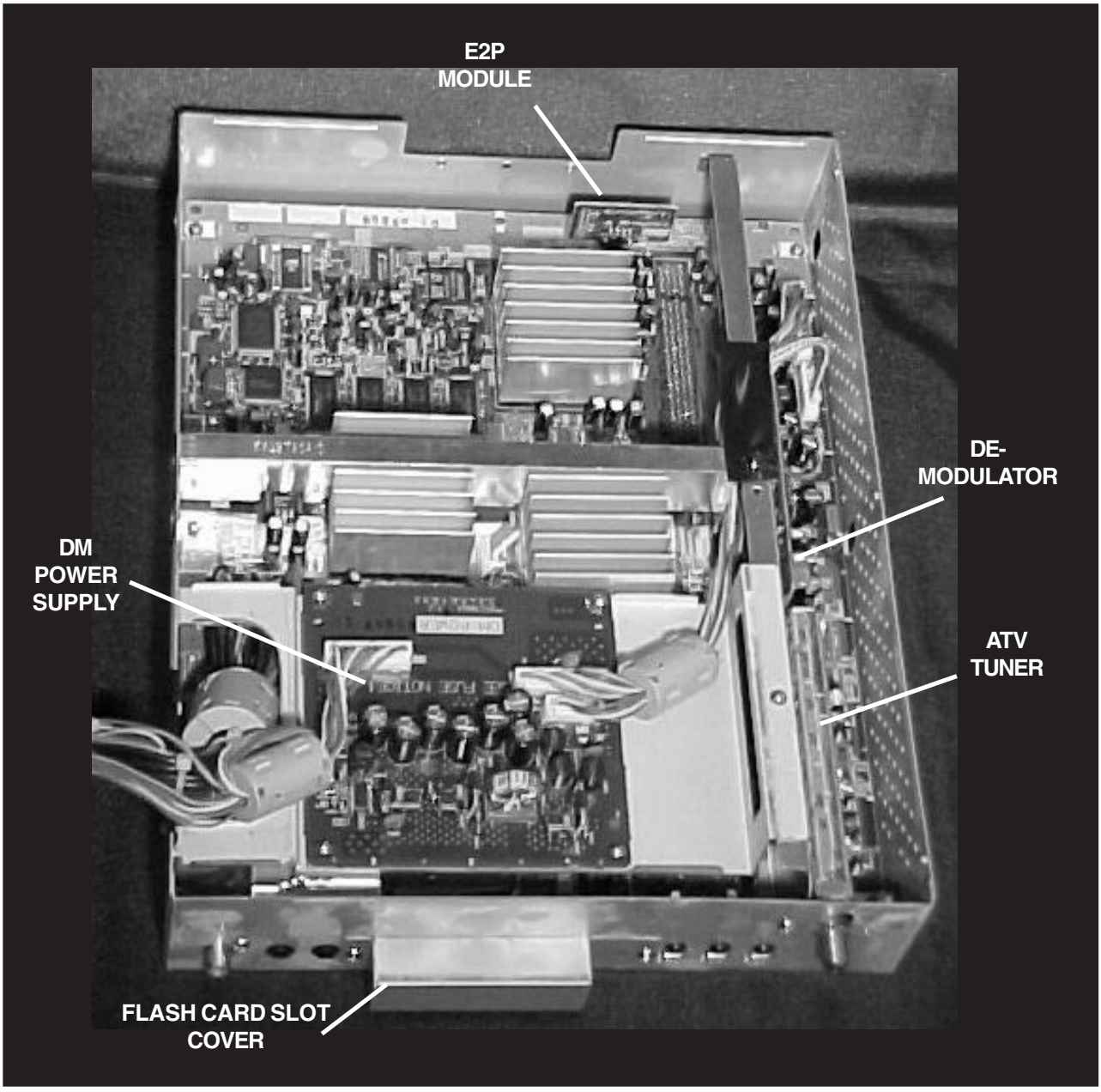
## PCB Locations




## Main Components Location



# DM Module Main Components Location



# CRT REPLACEMENT

## 1. Removal of the CRT

**Caution!** High voltage should be completely discharged prior to CRT removal. Since The CRTs receive high voltage from the HV Block, discharge by shorting the open end of the respective high voltage cable to chassis ground.

**Note:** Refer to the Cabinet Disassembly Procedures when performing steps 1 through 4.

1. Remove the Speaker Grille, Front Board, and Screen Assy.
2. Remove the Back Board.
3. Remove the Anode Lead Wire from the CR Block.
4. Remove the PCB-CRT.
5. Remove 4 hex-screws "a" retaining the Optical Unit. [Figure 5-1]
6. Remove 4 screws "b" retaining the Lens.

**Note: DO NOT loosen the RED screws.** Doing so will break the seal between the C-Element and the # 6 Lens, causing leakage of the CRT Coolant.

7. Remove 4 screws "c" retaining the CRT. [Figure 5-2]
8. Remove the Deflection Yoke from the neck of the CRT. [Figure 5-7]

**Figure 5-1**

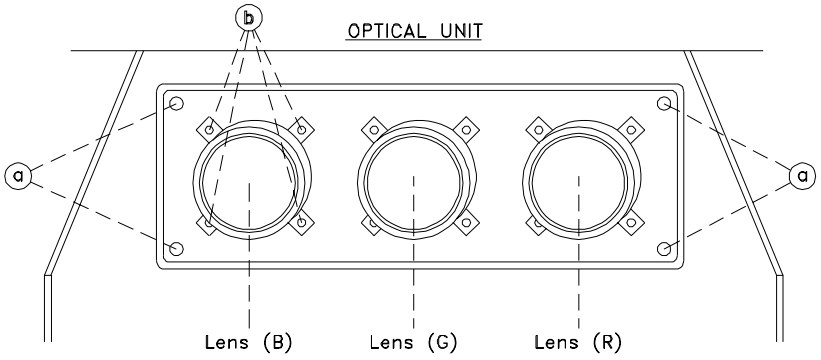
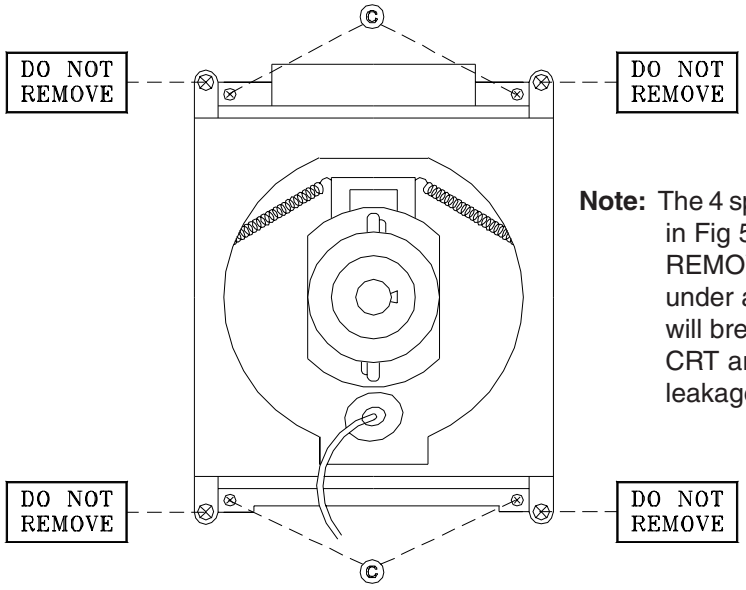



**Figure 5-2**




**Note:** The 4 spring-loaded screws shown in Fig 5-2 and labeled as "DO NOT REMOVE", should not be loosened under any circumstance. Doing so will break the seal between the CRT and the CRT-Spacer, causing leakage of the CRT Coolant.

## 2. Installation of the CRT

**Note:** The replacement CRT is supplied as an assembly comprised of the CRT and the Inner Lens with the space between them filled with ethylene glycol. Care should be taken during handling and installation to prevent shock from disrupting the seal or alignment between the CRT and Inner Lens. [Figure 5-3]

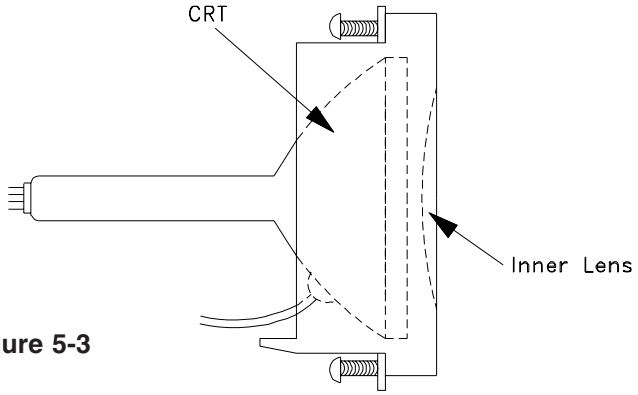



**Figure 5-3**

**Note:** The CRT fixing screws should not be loosened nor should they be removed. [Figure 5-4]

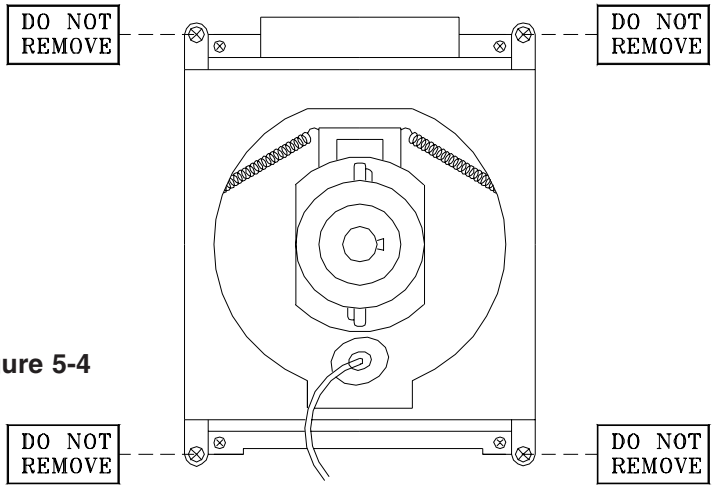



**Figure 5-4**

1. Carefully position the replacement CRT and fasten in place using 4 screws "d". [Figure 5-6]

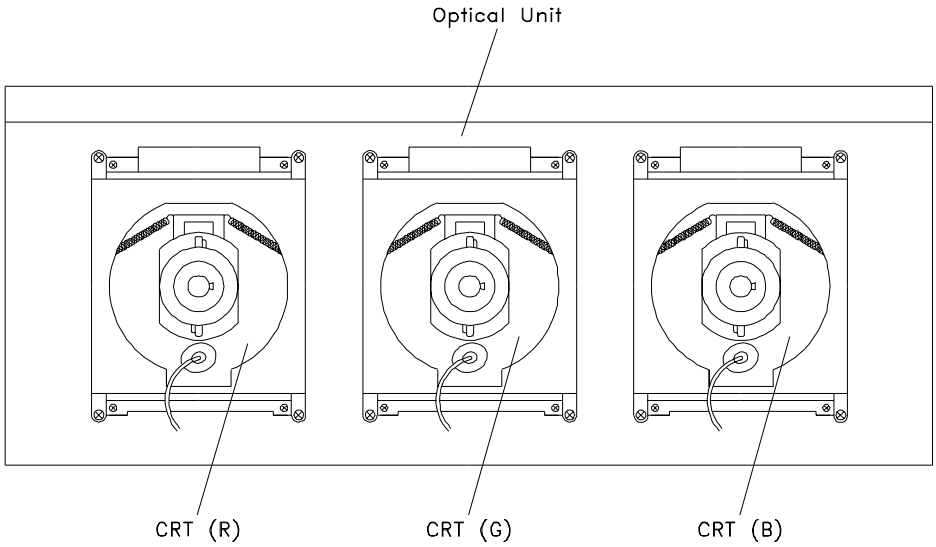



**Figure 5-5**

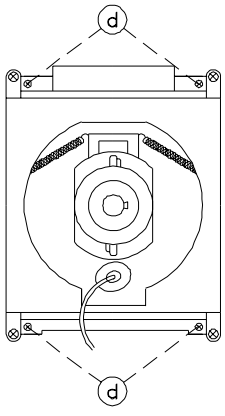



**Figure 5-6**

2. Install the Deflection Yoke on the CRT neck. [Figure 5-7]
3. Install the Lens that was removed in steps 8 and 9 of Removal Of The CRT. [ Figures 5-1 and 5-2 ]
    a) Position the Lens so that the Label faces the direction shown in Figure 5-8.
    b) Install the mounting screws. [Figure 5-1]
4. Connect the PCB-CRT.
5. Insert the Optical Unit into the Light Box Assembly.
6. Insert the Anode Lead Wire into the Flyback Transformer.
7. Re-clamp the Lead Wire in its original position.

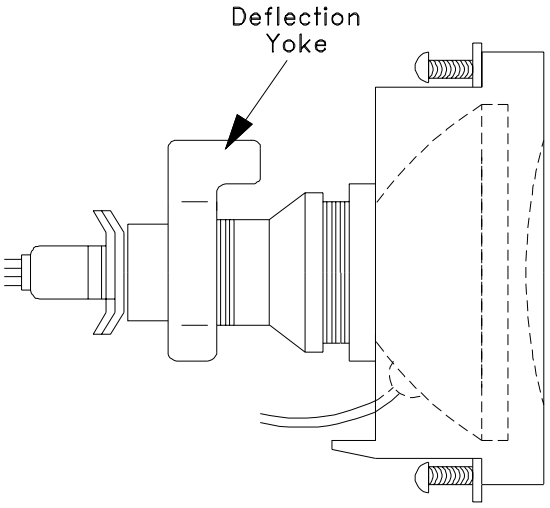



**Figure 5-7**

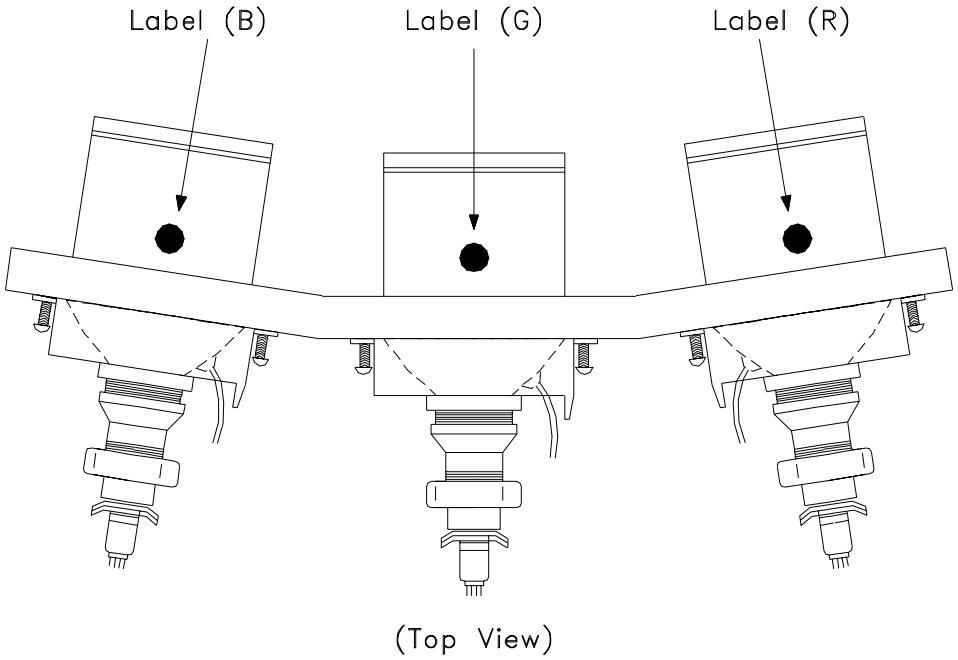



**Figure 5-8**

**Adjustment procedures after replacing the CRT(s)**

- CRT Cut Off / White Balance Adjustment
- Static Convergence Adjustment
- Dynamic Convergence Adjustment

# ELECTRICAL ADJUSTMENTS

**Note:** Perform only the adjustments required.
Do not attempt an alignment if proper equipment is not available.

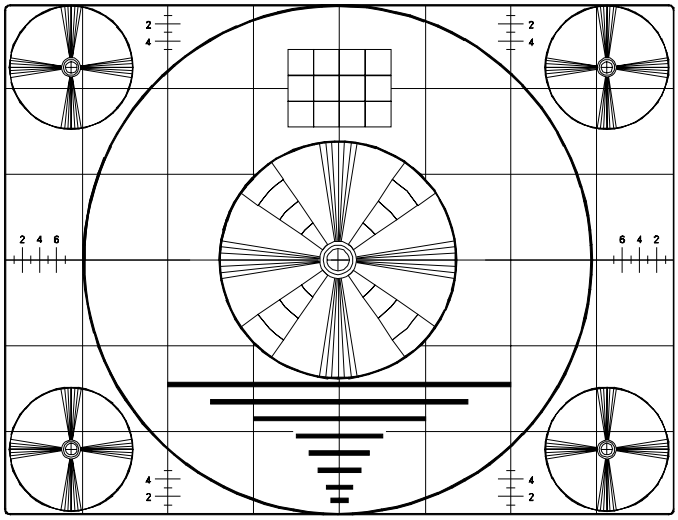
## Test Equipment

- Oscilloscope (Unless otherwise specified, use 10:1 probes)
- Signal Generator (both SD and HD capable)
- Frequency Counter
- Direct Current Voltmeter
- Direct Current Power Supply
- Multiplex Audio Signal Generator
- Direct Current Ampere Meter

## Test Signal

### *A. Monoscope Signal*

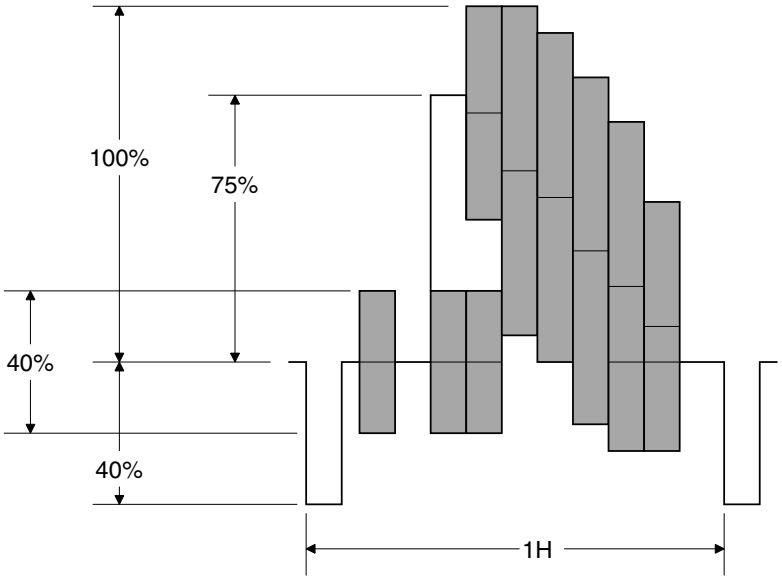
**Note**: If you do not have a monoscope signal source, connect the unit to a VCR and play a Monoscope *alignment tape.
(* Part Number: 859C568060)



**Monoscope Signal**

### *B. Color Bar Signal*

Use the color bar signal shown below, unless otherwise specified in this manual.




**Split-Field Color Bars (100% window)**

## Initial Setup

### *A. Option Menu Setup*

Follow the steps below for the initial set-up:

1. Select the "MENU" display by pressing the "MENU" button once.
2. Press the number buttons "2", "1", "7", "0" in sequence to select the "OPTION MENU" display.
3. Press the "ADJUST" button to select "INITIAL."
4. Press "ENTER."

**NOTE:** At this time channel 3 is automatically selected.

| (MENU-2-1-7-0) | |
|---|---|
| **OPTION MENU** | |
| Initial | |
| Power restore | :OFF |
| DTV Port | :Auto |

### *B. Default Settings*

**MAIN MENU DEFAULT SETTINGS**

| SETUP | |
|---|---|
| **Edit Setup** | |
| Review | |
| Antenna A | (✓) Enabled |
| Antenna B | (✓) Enabled |
| Antenna DTV | (✓) Enabled |
| Input DTV | (✓) Enabled |
| Input 1 | (✓) Enabled |
| Input 2 | (✓) Enabled |
| Input 3 | (✓) Enabled |
| Input 4 | (✓) Enabled |
| Input 5 | (✓) Enabled |
| Component 1 | (✓) Enabled |
| Component 2 | (✓) Enabled |
| VGA | (✓) Enabled |
| **Icon Position** | As above |
| **Transport Menu** | On |
| **Language** | English |
| **ANTENNA** | |
| Antenna | ANT A |
| Memorize Channels | Air |
| Channel | Ch-3 |
| Memory | Deleted |
| **CLOCK** | |
| Clock Setting | Manual |
| Set Time | 12:00 AM |
| Set Day | Monday |

| CAPTIONS | |
|---|---|
| Closed Captions | With Mute |
| CC Background | Gray |
| Digital Channel Guide | On |
| **V-CHIP PARENT LOCK** | |
| V-CHIP | Off |
| TV Rating | TV-PG |
| FV-Fantasy Violence | (✓) Enabled |
| D-Sexual Dialog | (✓) Enabled |
| L-Adult Language | (✓) Enabled |
| S-Sexual Situation | (✓) Enabled |
| V-Violence | (✓) Enabled |
| Program not Rated | (✓) Enabled |
| Movie Rating | PG |
| **V-CHIP LOCK BY TIME** | |
| V-Chip Start Time | 12:00 PM |
| V-Chip Stop Time | 12:00 PM |
| **Lock By Time** | |
| Lock by Time | Off |
| Unlock Time | N/A |
| Front Button Lock | Off |
| **TIMER** | |
| Timer | Off |
| Set Day | Everyday |
| Set Time | 12:00PM |
| Device | Ant-A |
| Channel | Ch-3 |

| AUDIO SETTINGS | |
|---|---|
| Volume | 30% |
| Bass | 50% |
| Treble | 50% |
| Balance | 50% |
| Surround | Off |
| Listen to | Stereo |
| Level Sound | Off |
| TV Speakers | On |
| **VIDEO SETTINGS** | |
| Contrast | 100% |
| Brightness | 50% |
| Sharpness | 50% |
| Color | 50% |
| Tint | 50% |
| Color Temp. | High |
| Video Noise | Standard |
| Image Type | Video |
| VSM Sharpness | On |
| Video Mute | On |
| Black Enhancement | On |
| **PIP/POP** | |
| Source | Ant A Ch 3 |
| PIP Position | Lower Right |
| POP Position | Right Half |
| Format | Stretched |
| PIP/POP Format | Dble. Window |

**A/V RESET DEFAULT SETTINGS (By Input)**

| A/V Memory | Ant A/B | Ant DTV | Inp-DTV | INPUTS 1/2/3/4/5 | Component 1/2 | VGA | 1394 1/2/3 |
|---|---|---|---|---|---|---|---|
| Contrast | Max. | Max. | Max. | Max. | Max. | Max. | Max. |
| Brightness | Center | Center | Center | Center | Center | Center | Center |
| Sharpness | Center | Center | Center | Center | Center | N/A | Center |
| Color | Center | Center | Center | Center | Center | Center | Center |
| Tint | Center | Center | Center | Center | Center | Center | Center |
| Color Temp. | High | High | High | High | High | High | High |
| Video Noise | Standard | N/A | Standard | Standard | Standard | N/A | N/A |
| Image Type | Video | N/A | Video | Video | Video | N/A | N/A |
| Bass | Center | Center | Center | Center | Center | Center | Center |
| Treble | Center | Center | Center | Center | Center | Center | Center |
| Balance | Center | Center | Center | Center | Center | Center | Center |
| Surround | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Listen To | Stereo | English | N/A | N/A | N/A | N/A | N/A |
| Level Sound | OFF | OFF | OFF | OFF | OFF | OFF | OFF |

### *C. A/V Memory*

Each of the external inputs has its' own Audio/Video Memory. A change in an A/V setting at a specific input is stored in memory for that specific input.

**A/V Reset**

1. The front panel AV Reset button initializes all A/V Memories.
2. The AV Reset in the user's menu initializes only the selected input's A/V Memory.

## LED Indicator Diagnostics

The "Power ON LED" provides an indication of the sets operation, and the possible cause of a malfunction.

### *1. Initial Control Circuitry Check*

Immediately after the TV is connected to an AC power source:

| LED Indications | Conditions | Probable Cause |
|---|---|---|
| Off | After AC is applied | Standy Power Supply or TV µPC not running |
| Fast Blink for 70 sec. | After AC is applied | Normal - DM µPC is booting up |
| Fast Blink (doesn't stop) | After AC is applied | TV µPC is running, but DM failed to boot up |
| Slow Blink | Set is Off | Normal - Timer is set for Automatic Turn ON |

### *2. Error Code Operational Check*

Pressing the front panel "INPUT" and "MENU" buttons at the same time, and holding for 5 seconds, activates the Error Code Mode. The LED flashes denoting a two digit Error Code, or indicating no problem has occured since the last Initalization.

**Note:** The front panel buttons must used, NOT those on the Remote Control.

- The number of flashes indicates the value of the MSD (tens digit) of the Error Code.
- The flashing then pauses for approximately 1/2 second.
- The LED then flashes indicating the value of the LSD (ones digit) of the Error Code.
- The Error Code is repeated a total of 5 times.

  Example: If the Error Code is "24", the LED will flash two times, pause, and then flash four times.

### *3. Error Codes*

The Error Code designations indicating a malfunction, or no malfunction, are listed below:

| Error Code | Probable Cause |
|---|---|
| 12 | Normal Operation - No Error Detected |
| 21 | X-Ray Protect |
| 22 | Short Protect |
| 23 | Loss of Horizontal Deflection |
| 24 | Loss of Vertical Deflection |

## Remote Control Operational Modes

There are two Remote Hand Unit Operational Modes, "Standard" and "NetCommand™". The Remote is initially in the "Standard" mode. The "NetCommand™" mode is used when controlling Home Theater devices using NetCommand™. To change the Remote Operational Mode:

- Set the Remote to the TV Layer
- Point the Remote away from the TV.
- To change to "Netcommand™" ... Hold the "Power" button and press "9-3-5" in sequence.
- To change to "Standard" ... Hold the "Power" button and press "0-0-0" in sequence.

## Circuit Adjustment Mode

Most of the adjustments can only be performed using the remote hand unit. Many of the adjustments must be performed in both the 480i and 1080i modes. Video/Color adjustments must be performed in the 480i and 1080i modes, and data must be preset in the 480P (DVD) and VGA modes.

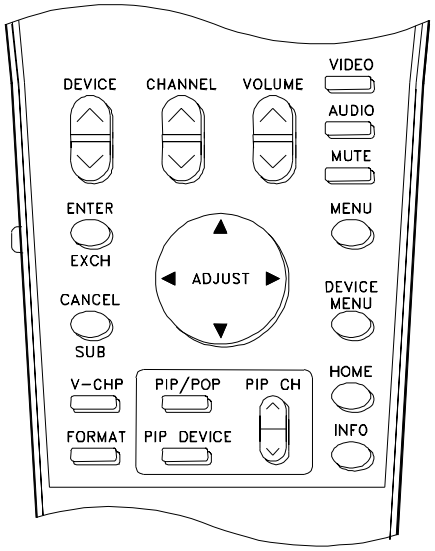
**Note:** Set the Remote Operational Mode to "NetCommandTM". (Hold the "Power" button and press "9-3-5" in sequence.) This slows the remote's response and makes adjustments easier. When adjustments are complete, **set the Remote to its' original Operational Mode.**

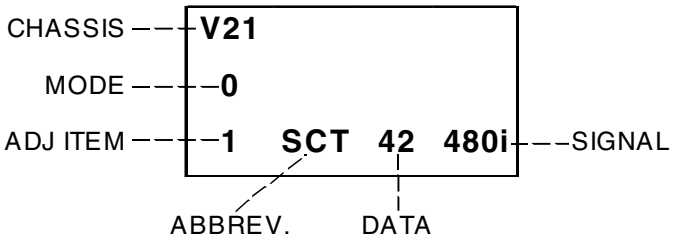
### *A. Activating the Circuit Adjustment Mode*

The current signal source determines if the activated Adjustment Mode is 480i or 1080i.

1. Select the signal source (480i or 1080i).
2. Press the "MENU" button on a remote hand unit.
3. Press the number buttons "2", "1", "5", "7" in sequence. The screen will change to the Adjustment Mode.

**Note:** Repeat steps 1 and 2 if the circuit adjustment mode does not appear on screen.

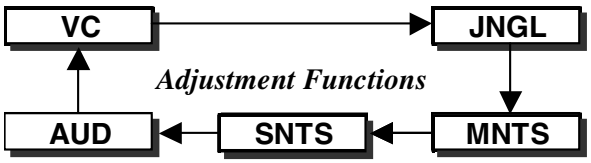



### *B. Selection of adjustment Functions and Adjustment Items*

To select an adjustment item in the circuit adjustment mode, first select the adjustment function that includes the specific adjustment item to be selected. Then select the adjustment item. Refer to the following pages for the listing of adjustment functions and adjustment items.

1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the Function changes in the following sequence:




2. Press the "VIDEO" button to select a specific Adjustment Item. The Item number increases each time the "VIDEO" button is pressed.

### *C. Changing Data*

After selecting an adjustment Item, use the "ADJUST UP/DOWN" buttons to change data.

- Press "ADJUST DOWN" to decrease the data value.
- Press "ADJUST UP" to increase the data value.

### *D. Saving Adjustment Data*

Press "ENTER" to save adjustment data in memory. The character display turns red for approximately one second in this step.

**Note:** If the circuit adjustment mode is terminated without pressing "ENTER", changes in adjustment data are not saved.

### *E. Terminating the Circuit Adjustment Mode*

Press the "MENU" button on the remote hand unit twice to terminate the adjustment mode.

**Note:** The circuit adjustment mode can also be terminated by turning power OFF.

### *F. Toggle Between Reception Modes*

Pressing "3" when in the Adjustment Mode VC Function toggles between 480i, 480p, 1080i and VGA. However data changes are not automatically saved. **Press "ENTER" to save data before pressing "3"**.

## On Screen Display Position Adjustment Mode

### *Activation*

1. Select 480i or 1080i source.
2. Press MENU-2-1-8-8

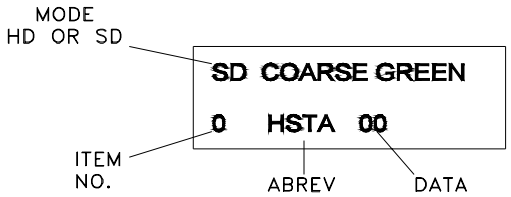
## Convergence Adjustment Mode

The Convergence mode is used to perform raster geometry correction, and convergence adjustments. These adjustments must be made in both the SD (NTSC) and HD modes.

**Note:** Before activating the Convergence mode, turn "Video Mute" Off. The internal crosshatch pattern will not be displayed with "Video Mute" On, only a blue background is displayed.

### *A. Convergence Mode Activation*

1. Press MENU-2-1-5-9
2. When the Convergence Mode is activated, this display appears on a Green Crosshatch.




### *B. Selecting the HD or SD Mode*

1. **Select the Signal Source** before entering the Convergence Mode, either an NTSC or HD source.

2. **Enter the Convergence Mode**
   - If the signal source is NTSC, the SD mode is activated.
   - If the signal source is HD, the HD mode is activated.

3. **Activating the HD mode when no HD signal is available**
   - Press the "DEVICE" button.
   - Use the "UP-DOWN-RIGHT-LEFT" direction buttons to select the ANT-DTV, then press "ENTER".
   - Press "MENU-0-1-5-9-5" in sequence to activate the Coarse Green HD Convergence mode.

### *C. Convergence Mode Functions*

In the Convergence Mode there are three main Functions (Categories).

- Pressing "6" activates CONV MISC
- Pressing "5" activates COARSE CONV
- Pressing "4" activates FINE CONV

### *D. CONV MISC (Press 6)*

This mode is used to preset data values controlling the Convergence Generator, and to perform the HV Regulation adjustment.

1. Use the VIDEO button to select an item.
2. Use the ADJUST buttons to change data.

**NOTE:** When Item "1 HVOL" is selected the screen goes black except for the data display. This occurs since a black screen is required when making the HV Regulation adjustment.

### *E. COARSE CONV (Press 5)*

There are four Sub Functions in the Coarse mode, COARSE GREEN, COARSE RED, COARSE BLUE and DF.

- COARSE GREEN .... used to make Coarse Raster Geometry Adjustments.
- COARSE RED ... used to make Coarse Red Convergence Adjustments.
- COARSE BLUE ... used to make Coarse Blue Convergence Adjustments.
- DF ... used to preset data values controlling the Dynamic Beam Focus circuit drive signal.

1. Use AUDIO button to select a Sub Function
2. Use the VIDEO button to select an Adjustment Item.
3. Use the ADJUST buttons to change data.

### *F. FINE CONV (Press 4)*

**Sub Functions**

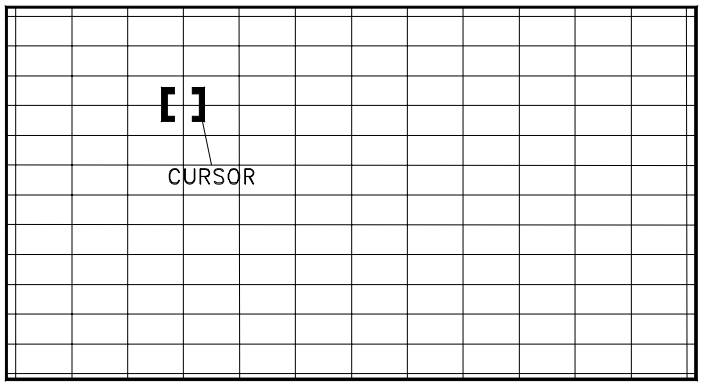
This mode is used to perform Fine Raster Correction, and Fine Red and Blue Convergence Adjustments. There are three Sub Adjustment Functions, selected with the AUDIO button:

- FINE GREEN .... a Green Crosshatch is displayed, to make Fine Raster Corrections.
- FINE RED .... a White Crosshatch is displayed, to make Fine Red Convergence Adjustments.
- FINE BLUE .... a White Crosshatch is displayed, to make Fine Blue Convergence Adjustments.

**Cursor**

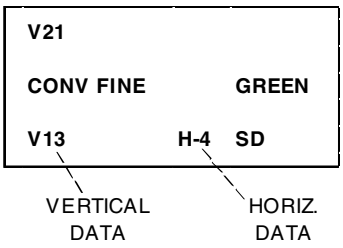
In the Fine mode a Cursor is added to the Crosshatch. The ENTER button toggles the Cursor between two modes:

- MOVE (blinking Cursor) .... use the ADJUST buttons to select any of 64 points on the Crosshatch.
- ADJUST (Non blinking Cursor) .... the ADJUST buttons adjust the active color at the current Cursor position, horizontally or vertically.




**Display**

The on-screen display changes in the Fine mode, as shown at the right. The display shows the vertical and horizontal data for the current Cursor Position, and the horizontal and vertical coordinates for that position.




### *G. Saving Data and Exiting the Convergence Mode*

Press MENU twice to exit the Convergence mode, data is automatically saved.

## E2PROM Replacement

IC7A01 stores some adjustment data. After replacing the IC, set the data to the values given in the following tables. If good performance is not obtained, perform the Adjustments Procedures given in the Notes column.

## List of Adjustment Items.

| Function Display | | Adjustment | Data | Initial Data | | | | Notes |
|---|---|---|---|---|---|---|---|---|
| NO. | Abbrev. | Description | Range | 480i | 480p | 1080i | VGA | |
| 1 | SCT | Picture Gain (H-Temp) | 0~63 | 42 | 42 | 42 | 42 | Sub Contrast |
| 2 | SBRT | Sub Brightness (H-Temp) | 0~63 | 26 | 26 | 26 | 26 | Black Level |
| 3 | SCOL | Sub Color (H-Temp) | 0~15 | 7 | 5 | 3 | 3 | Preset |
| 4 | STIN | Sub Tint | 0~15 | 6 | 10 | 15 | 7 | " |
| 5 | SCON | Sub Contrast (H-Temp) | 0~15 | 2 | 3 | 3 | 3 | " |
| 6 | RDRH | R-Drive (high) | 0~63 | 30 | 30 | 30 | 30 | White Balance |
| 7 | GDR | G-Drive | 0~63 | 35 | 35 | 35 | 35 | Preset |
| 8 | BDRH | B-Drive (high) | 0~63 | 40 | 56 | 56 | 56 | White Balance |
| 9 | CTRH | R-Cutoff (high) | 0~63 | 25 | 25 | 25 | 25 | " |
| 10 | CTGH | G-Cutoff (high) | 0~63 | 55 | 55 | 55 | 55 | Preset |
| 11 | CTBH | B-Cutoff (high) | 0~63 | 40 | 20 | 20 | 20 | White Balance |
| 12 | RDRL | R-Drive (low) | 0~63 | 35 | 35 | 35 | 35 | " |
| 13 | BDRL | B-Drive (low) | 0~63 | 40 | 40 | 40 | 40 | " |
| 14 | CTRL | R-Cutoff (low) | 0~63 | 25 | 25 | 25 | 25 | " |
| 15 | CTGL | G-Cutoff (low) | 0~63 | 55 | 55 | 55 | 55 | " |
| 16 | CTBL | B-Cutoff (low) | 0~63 | 15 | 15 | 15 | 15 | " |
| 17 | SCTL | Picture Gain (L-Temp) | 0~63 | 42 | 42 | 42 | 42 | Preset |
| 18 | SBRL | Sub Brightness (L-Temp) | 0~63 | 26 | 26 | 26 | 26 | User |
| 19 | SCLL | Sub Color (L-Temp) | 0~15 | 2 | 2 | 2 | 2 | User |
| 20 | SCNL | Color Gain (L-Temp) | 0~15 | 0 | 0 | 0 | 0 | " |
| 23 | COL | Color Gain | 0~63 | 31 | 31 | 31 | 31 | |
| 56 | VM | VM level | 0~3 | 2 | 2 | 2 | 0 | " |
| 60 | CRO1 | CR Offset 1 | 0~15 | 10 | 7 | 7 | 7 | Cb Cr Offset |
| 61 | CBO1 | CB Offset 1 | 0~15 | 10 | 7 | 7 | 7 | Cb Cr Offset |
| 64 | R-YR | R-Y gain of R-Y | 0~15 | 2 | 7 | 7 | 7 | Preset |
| 65 | R-YB | R-Y gain of B-Y | 0~15 | 10 | 2 | 2 | 2 | " |
| 66 | G-YR | G-Y gain of R-Y | 0~15 | 10 | 8 | 8 | 8 | " |
| 67 | G-YB | G-Y gain of b-y | 0~15 | 6 | 11 | 11 | 11 | " |
| 69 | RON | Red On | 0~1 | 1 | 1 | 1 | 1 | " |
| 70 | GON | Green On | 0~1 | 1 | 1 | 1 | 1 | " |
| 71 | BON | Blue ON | 0~1 | 1 | 1 | 1 | 1 | " |

## JNGL Function (Jungle)

IC4A01

| Display | | Adjustment | Data | 48" Data | | 55" Data | | 65" Data | | 73" Data | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Abbrev. | Description | Range | HD | SD | HD | SD | HD | SD | HD | SD | |
| 1 | HWID | Horizontal Width | 0~63 | 20 | 16 | 38 | 33 | 35 | 31 | 36 | 33 | Width |
| 2 | HKEY | Horizontal Keystone | 0~63 | 38 | 43 | 38 | 43 | 33 | 31 | 31 | 33 | Preset |
| 3 | EWPT | EW-PCC on top | 0~63 | 23 | 22 | 23 | 22 | 25 | 22 | 22 | 24 | " |
| 4 | EWCT | Corner Pin (top) | 0~63 | 32 | 34 | 32 | 34 | 37 | 34 | 31 | 32 | |
| 5 | EWPB | EW-PCC on bottom | 0~63 | 26 | 31 | 26 | 31 | 27 | 31 | 27 | 32 | " |
| 6 | EWCB | Corner Pin (bottom) | 0~63 | 29 | 35 | 29 | 35 | 35 | 35 | 31 | 34 | |
| 7 | VHGT | Vertical Height | 0~63 | 23 | 30 | 23 | 27 | 25 | 27 | 32 | 34 | Height |
| 8 | VLIN | Vertical Linearity | 0~15 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | Preset |
| 9 | VSCN | Vertical S-Correction | 0~15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | " |
| 14 | H-POS | Horizontal Position | 0~63 | 30 | 37 | 30 | 37 | 30 | 37 | 30 | 37 | " |
| 20 | V-POS | Vertical Position | 0~63 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | " |

## MNTS Function (Main Decoder)

IC2E00

| Function Display | | Adjustment | Data | Initial Data | | Notes |
|---|---|---|---|---|---|---|
| Item # | Abbrev. | Description | Range | RF | Non RF | |
| 1 | TNTM | Main Tint | 0~63 | 24 | 24 | Preset |
| 2 | COLM | Main Color | 0~63 | 17 | 17 | " |
| 3 | YDRM | Main Gain Control | 0~31 | 5 | 5 | Main Y Level |
| 4 | VPDM | Pr Pedestal Adjustment | 0~15 | 7 | 7 | |
| 5 | UPDM | Pb Pedestal Adjustment | 0~15 | 7 | 7 | |

## SNTS Function (Sub Decoder)

IC2H00

| Function Display | | Adjustment | Data | Initial | Notes |
|---|---|---|---|---|---|
| Item # | Abbrev. | Description | Range | Data | |
| 1 | TNTS | Sub Tint | 0~63 | 26 | Preset |
| 2 | COLS | Sub Color | 0~63 | 18 | " |
| 3 | YDRS | Sub Gain Control | 0~31 | 5 | Sub Y Level |
| 4 | VPDS | Pr Pedestal Adjustment | 0~15 | 7 | " |
| 5 | UPDS | Pb Pedestal Adjustment | 0~15 | 7 | " |

## AUDIO Function

IC3A01

| Function Display | | Adjustment | Data | Initial | Notes |
|---|---|---|---|---|---|
| Item # | Abbrev. | Description | Range | Data | |
| 1 | INP | Input Level Alignment | 0~15 | 8 | Input Level |
| 2 | WDE | Wideband Separator Align. | 0~31 | 3 | Separation |
| 3 | SPC | Spectral Separator Align. | 0~31 | 3 | " |

## CONV MISC

(MENU-2-1-5-9-6)

| Item Number | Abbrev. Name | Data | | Notes |
|---|---|---|---|---|
| | | SD | HD | |
| 1 | HVOL | 160 | | HV Adj. |
| 2 | VCNT | 29 | 29 | Preset |
| 3 | VSTR | 0 | 0 | " |
| 4 | VOFS | 25 | 0 | " |
| 5 | STLN | 45 | 34 | " |
| 6 | FPHS | 288 | 288 | " |
| 7 | CPHS | 15 | 15 | " |
| 8 | HOFS | 22 | 22 | " |
| 9 | DPHS | 0 | 0 | " |
| 10 | DOFS | 51 | 51 | " |
| 11 | TPHS | 34 | 36 | " |
| 12 | TPVD | 25 | 39 | " |
| 13 | ODEV | 200 | 125 | " |
| 14 | HRTC | 1 | 1 | " |
| 15 | DRTC | 1 | 1 | " |
| 16 | DAC | 1 | 1 | " |
| 17 | EPWP | 0 | 0 | " |
| 18 | SCRL | 25 | 25 | " |
| 19 | SDEL | 600 | 600 | " |
| 20 | FDEL | 3 | 3 | " |

* Do not change "1 HVOL" if it has been previously set.

## OSD Horizontal Centering

(MENU-2-1-8-8)

| Abbrev. | Description | Data Range | Initial Data |
|---|---|---|---|
| OSDSD | SD OSC Horizontal Position | 0~960 | 120 |

## DYNAMIC FOCUS

(MENU-2-1-5-9)

| Item Number | Abbrev. Name | Description | Data SD&HD |
|---|---|---|---|
| 1 | DFH | Dynamic Focus Horizontal | -500 |
| 2 | DFV | Dynamic Focus Vertical | -100 |

## CONV GREEN Items

(MENU-2-1-5-9-5)

| No. | Abbrev. Name | Description | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HSTA* | Horizontal Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | VSTA* | Vertical Position | -15 | 0 | -15 | 0 | -15 | 0 | -20 | 0 |
| 3 | SKEW | Skew (Y axis rotation) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TILT | Tilt (X axis rotation) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HWID | Horisontal Width | 30 | 30 | 30 | 30 | 30 | 30 | 20 | 20 |
| 6 | HLIN | Horizontal Linearity | 0 | 0 | -15 | -10 | -10 | -20 | -10 | -10 |
| 7 | SPCC | Side Pin Cushion Correction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | HKEY | Horizontal Keystone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | TBPC | Top/Bottom PC Correction | -150 | -150 | -200 | -190 | -200 | -170 | -220 | -180 |
| 10 | VKEY | Vertical Keystone | 15 | 10 | 15 | 10 | 0 | 0 | 10 | 10 |
| 11 | VWID | Vertical Height | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | VLIN | Vertical Linearity. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

***HSTA and VSTA must not exceed ±200**

## CONV RED Items

(MENU-2-1-5-9-5)

| No. | Abbrev. Name | Description | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HSTA | Horizontal Position | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| 2 | VSTA | Vertical Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | SKEW | Skew (Y axis rotation) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TILT | Tilt (X axix rotation) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HLIN | Horixontal Linearity | -190 | -190 | -180 | -170 | -150 | -150 | -220 | -190 |
| 6 | HWID | Horizontal Width | 0 | -10 | 0 | 0 | 10 | 10 | 10 | 10 |
| 7 | VKEY | Vertical Keystone Correction | -120 | -110 | -100 | -95 | -90 | -70 | -100 | -110 |
| 8 | VWID | Vertical Height | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | VLIN | Vertical Linearity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | TPPC | Top/Bottom PC Correction | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| 11 | SDBW | Horizontal Side Bow | 30 | 30 | 30 | 30 | 30 | 30 | 50 | 30 |

***HSTA and VSTA must not exceed ±200**

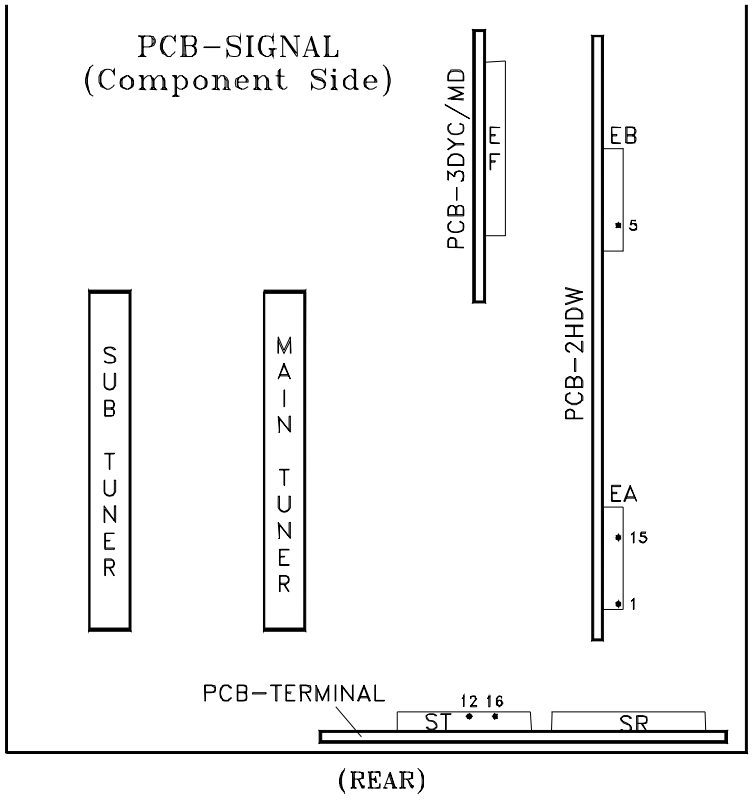
## CONV BLUE Items

(MENU-2-1-5-9-5)

| No. | Abbrev. Name | Description | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HSTA | Horizontal Position | -50 | -50 | -50 | -50 | -50 | -50 | -50 | -50 |
| 2 | VSTA | Vertical Position | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | SKEW | Skew (Y axis rotation) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TILT | Tilt (X axix rotation) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HLIN | Horixontal Linearity | 200 | 190 | 175 | 170 | 160 | 150 | 230 | 200 |
| 6 | HWID | Horizontal Width | 0 | -30 | 0 | -10 | 0 | -10 | -20 | -20 |
| 7 | VKEY | Vertical Keystone Correction | 130 | 80 | 90 | 65 | 70 | 75 | 80 | 90 |
| 8 | VWID | Vertical Height | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | VLIN | Vertical Linearity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | TPPC | Top/Bottom PC Correction | 0 | -20 | 0 | 0 | 0 | -20 | -20 | 0 |
| 11 | HSBW | Horizontal Side Bow | -30 | -30 | -30 | -30 | -30 | -30 | -30 | -30 |

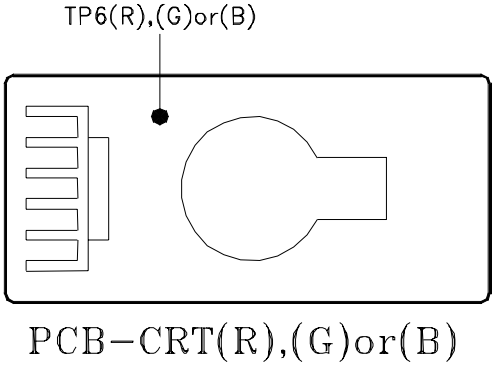
***HSTA and VSTA must not exceed ±200**

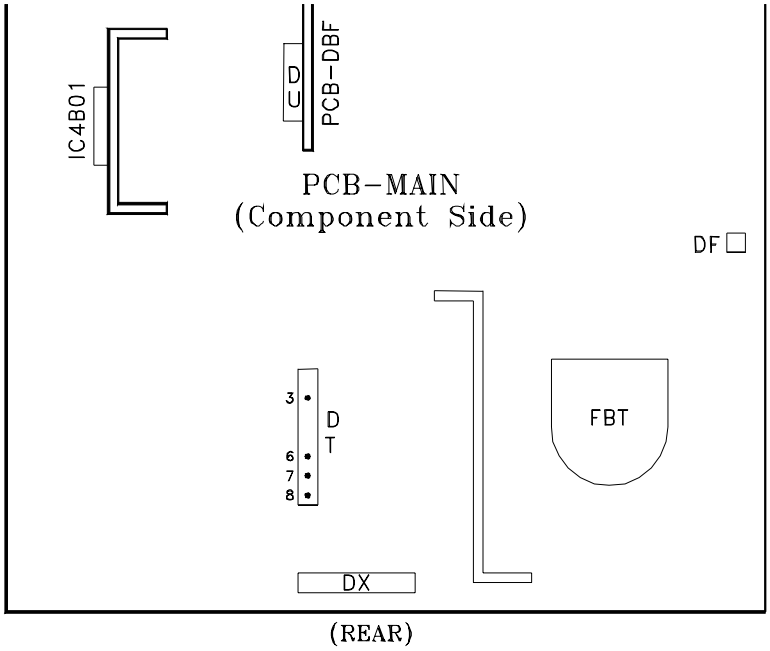
# Adjustment Test Point Location




**Test Points**

DT pin 3 - HV Adjust
DT pin 6 - Ground
DT pin 7 - 12 Volts
DT pin 8 - ACL
EA pin 1 - Sub Picture (Y)
EA pin 15 - Main Picture (Y)
EB pin 5 - POP (Cr)
ST pin 12 - Left Audio
ST pin 16 - Right Audio
TP6(R, G or B) - CRT Cathode



## [Audio Circuit]

## 1. MCS Input Level

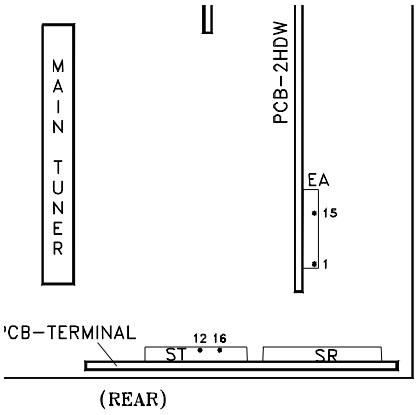
**Purpose:** Check the input signal level to the MCS circuit

**Symptom:** Distorted sound during a stereo broadcast.

| | |
|---|---|
| **Measuring Instrument** | Oscilloscope |
| **Test Point** | Connector ST pins 16&12 |
| **Ext. Trigger** | ------ |
| **Measuring Range** | 50mV/Div |
| **Input Signal** | RF Stereo<br>300 Hz modulation |
| **Input Terminal** | RF Input |

1. Supply an RF MCS signal to the Ant A input, 300 Hz at 100% modulation (25 kHz deviation) for right and left channels.
2. Connect the oscilloscope to connector ST pin 16 (Right Audio).
3. Enter the Adjustment Mode and select the Audio Function.
4. Verify that the Audio Function items are set to the data values given the table below.
5. Set the data for Item “1 INP” for 1.56 Vp-p ±0.06V. (550mv ±10mv rms)
6. Connect the oscilloscope to connector ST pin 12 (Left Audio).
7. Confirm that the left audio level at pin 12 of the ST connector is 1.56 Vp-p ±0.06V (550mv ±20mv rms).

**Note:** *Adjustment 2 (Stereo Separation) must be performed after this adjustment)*




**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function ……..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ……..…..ADJUST
Save Data …. ……..ENTER
Exit ……..MENU (twice)

**AUDIO Function**

| Item # | Abbrev. | Data |
|---|---|---|
| 1 | INP | 8 |
| 3 | WDE | 3 |
| 4 | SPC | 3 |

## [Audio Circuit]

## 2. Separation

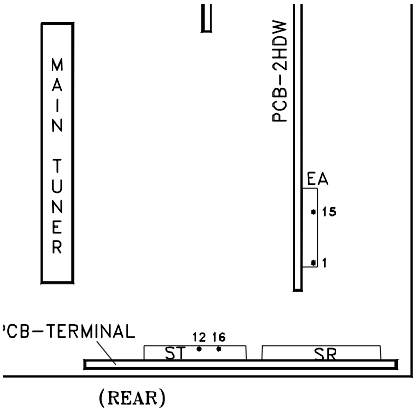
**Purpose** Check stereo separation

**Symptom:** Poor stereo separation

| | |
|---|---|
| **Measuring Instrument** | Oscilloscope |
| **Test Point** | Conector ST pin 16 |
| **Ext. Trigger** | ------ |
| **Measuring Range** | 10mV/Div |
| **Input Signal** | RF Stereo |
| **Input Terminal** | RF Input |

**Note:** *This adjustment must follow Adjustment 1 (Input Level)*

1. Supply a RF Stereo Signal (dual tone stereo) to the Ant. A input.
   - Left Channel = 300 Hz modulation
   - Right Channel = no modulation
2. Connect the oscilloscope to connector ST pin 16 (Right Audio).
3. Enter the Adjustment Mode and select the Audio Function.
4. Set the data for Item “3 WDE” for minimum 300 Hz signal.
5. Change the modulation frequency to 3kHz.
6. Adjust the data for Item “4 SPC” for minimum 3kHz signal.




**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function ……..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ……..…..ADJUST
Save Data …. ……..ENTER
Exit ……..MENU (twice)

**[HV Circuit]**

**3. HV Regulation**

**Purpose:** To set the CRT Anode voltage.

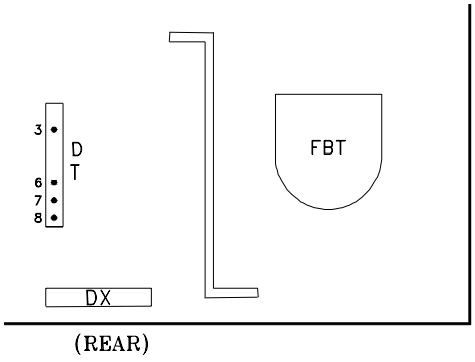
**Symptom:** Dark Picture

| | |
|---|---|
| **Measuring Instrument** | DC Voltmeter |
| **Test Point** | DT connector pins 3 & 6 |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------- |
| **Input Signal** | Video Signal Monoscope |
| **Input Terminal** | Video Input |

**Note:** *This adjustment must be rechecked following Adjustment 9 CRT Cutoff.*

1. Supply a video monoscope signal.
2. Sent Contrast to maximum, and Brightness to mid position.
3. Connect a DC volt meter between pins 3 and 6 of the DT connector. (Positive lead to pin 3)
4. Activate the Conv-Misc Mode.
5. Select Item "1 HVOL" (screen goes black).
6. Adjust Item "1 HVOL" for 15.4V ±0.1V on the meter.
7. Save data and exit the Conv-Misc mode.
8. Confirm that the voltage does not change more than 0.15V.

**Note:** *This adjustment must be performed if E2RESET or Convergence E2RESET are activated.*




**CONVERGENCE MODE**

Activate ……..MENU-2-1-5-9
Misc. ……..……"6"
Coarse……..…."5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

**[Video Circuit]**

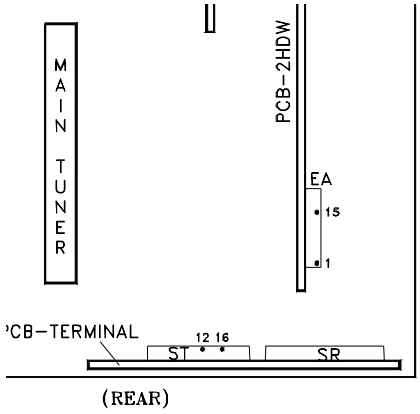
**4. Main/Sub Y Level**

**Purpose** To set picture luminance

**Symptom:** Excess or insufficient brightness.

| | |
|---|---|
| **Measuring Instrument** | Oscilloscope |
| **Test Point** | EA connector pins 15 & 1 |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | Color Bars |
| **Input Terminal** | Video Input |

1. Supply a color bar signal to a Video Input (not an RF input).
2. Select the color bar signal for both the main and sub pictures.
3. Connect the oscilloscope to connector EA pin 15.
4. Activate the Adjustment Mode
5. Select Item "3 YDRM" in the MNTS function.
6. Adjust the data for 0.7 Vp-p max. - 0.67 Vp-p min. at EA pin 15. (If it cannot be adjusted within this range, set to the lower value)
7. Move the oscilloscope to EA pin 1.
8. Select Item "3 YDRS" in the Sub Matrix function.
9. Adjust the data to equal the MAIN-Y Gain (+0.01V -0.04V).




**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …...……..AUDIO
Item No. ……..……VIDEO
Adjust Data ……..ADJUST
Save Data …. ……ENTER
Exit ……..MENU (twice)

## [Video Circuit]

## 5. Side by Side Sub Picture Tint

**Purpose:** To match the sub picture color to that of the main picture.

**Symptom:** Main and sub pictures colors differ.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | NTSC |
| **Input Terminal** | Video |

1. Supply an NTSC signal to an External Video Input.
2. Select the NTSC signal as the source for both the main and sub pictures.
3. Activate Side by Side POP
3. Activate the Adjustment mode.
4. Select Item “1 TNTS” in the SNTS Function.
5. Adjust data to match the sub picture color to that of the main picture.
   (If “1 TNTS” range is short, adjust Items “4 VPDS” and “5 UPDS”)

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …...……..AUDIO
Item No. ……..……VIDEO
Adjust Data ….……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

## [Video Circuit]

## 6. Side by Side Sub Color

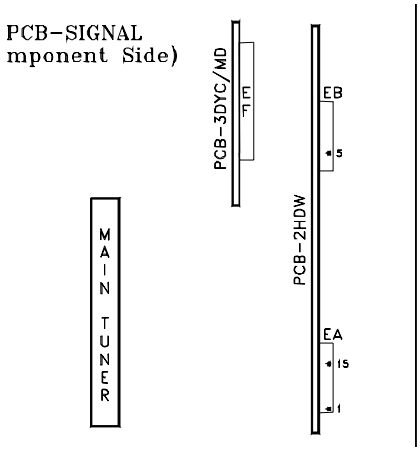
**Purpose** To set the sub picture color level.

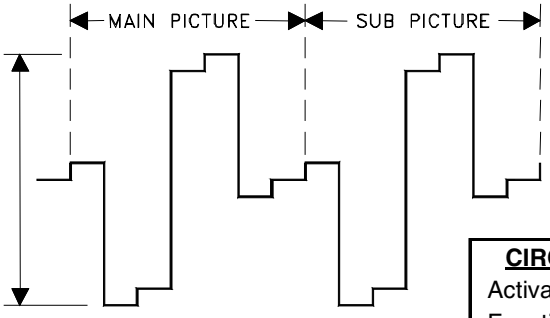
**Symptom:** Main and sub pictures color levels differs.

| | |
|---|---|
| **Measuring Instrument** | Oscilloscope |
| **Test Point** | EB connector pin 5 |
| **Ext. Trigger** | ------ |
| **Measuring Range** | 200mV/div<br>20usec/div |
| **Input Signal** | Color Bars |
| **Input Terminal** | Video Input |

**Note:** *Let the set run for at least one minute before making this adjustment.*

1. Supply a color bar signal.
2. Select the color bar signal as the source for both the main and sub picture.
3. Connect an oscilloscope to pin 5 of the EB connector (Cr signal).
4. Activate the Side by Side mode.
5. Activate the Service Mode
6. Select Item “2 COLS” in the SNTS function.
7. Adjust data so the amplitude of the Sub signal equals that of the main signal.




**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …...……..AUDIO
Item No. ……..……VIDEO
Adjust Data ….……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

**[CRT Circuit]**

**7. CRT Cutoff**

**Purpose:** To set the cutoff point for all three CRTs.

**Symptom:** Monochrome has a color tint, or incorrect brightness.

| | |
|---|---|
| **Measuring Instrument** | Oscilloscope |
| **Test Point** | TP6R, TP6G, TP6B |
| **Ext. Trigger** | ------ |
| **Measuring Range** | 50V/Div. 2msec/Div. |
| **Input Signal** | None |
| **Input Terminal** | Video Input |

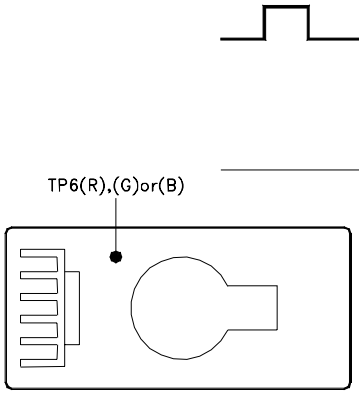
**Note**: ***Use the Expand mode (full screen)***

1. Select an External Input with no signal.
2. Enter the Adjustment Mode, VC Function.
3. Press "1", automatically blanks the screen and sets COL to 0.
4. Set the data to the values given in the table below.
5. Connect the oscilloscope to TP6R.
6. Adjust the Red Screen VR so the black level is 180V, as shown below, or 186V ±1VDC using an DC Voltmeter.
7. Repeat Steps 4 and 5 to set the Blue and Green Screen VRs, using TP6G and TP6B.

**Note:** *White Balance must be performed after this adjustment.*

**Cutoff Preset VC Data**

| Item | Abbr | Data |
|---|---|---|
| 1 | SCT | 42 |
| 2 | SBRT | 26 |
| 5 | SCON | 2 |
| 6 | RDRH | 30 |
| 7 | GDR | 35 |
| 8 | BDRH | 40 |
| 9 | CRTH | 25 |
| 10 | CTGH | 55 |
| 11 | CTBH | 20 |




**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

**[CRT Circuit]**

**8. White Balance (NTSC)**

**Purpose** To set the CRTs white level in the NTSC mode.

**Symptom:** Monochrome has a color tint.

| | |
|---|---|
| **Measuring Instrument** | DC ma meter |
| **Test Point** | ------ |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | NTSC White Raster |
| **Input Terminal** | RF or Video |

**Note**: ***Use the "FORMAT" button to activate the Expand mode (full screen).***

1. Supply a full White Raster Signal
2. Activate the Service Mode, VC function.
3. Set the data for Item "23 COL" to 0.
4. Adjust Items "6 RDRH" and "8 BDRH" for optimum white at the center of the screen.
5. Reduce the input luminance level to 25%.
6. Adjust Items "9 CTRH" and "11 CTBH" for optimum white.
7. Insert a Milliammeter in series with each CRT Cathode. The maximum allowable current for each CRT is given in the table below.
8. Set the white raster to 100% and adjust Items "12 RDRL" and "13 BDRL" for optimum white at the center of the screen.
9. Reduce the luminance level to 25%.
10. Adjust Item "14 CTRL" and "16 CTBL" for optimum white.
11. Set the data for Item "23 COL" back to 31.

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

**Maximum CRT Current**

| CRT | 55"& 65" CURRENT | 73" CURRENT |
|---|---|---|
| RED | 580 uA | 900 uA |
| GREEN | 580 uA | 900 uA |
| BLUE | 580 uA | 900 uA |

**[CRT Circuit]**

**9. White Balance (HD)**

**Purpose:** To set the CRTs white level in the HD mode.

**Symptom:** Monchrome pictures have a color tint.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | HD White Raster |
| **Input Terminal** | DTV Inputs |

1. Supply an HD Full White Raster signal to the DTV Inputs.
2. Select the DTV Inputs (Input button)
3. Activate the Adjustment mode, VC Function.
4. Set Item “23 COL” to 0.
5. Adjust Items “6 RDRH” and “8 BDRH” for optimum white at the center of the screen.
6. Reduce the input signal luminance to 25%.
7. Adjust Items “9 CTRH” and “11 CTBH” for optimum white.
8. Set the data for Item “23 COL” back to 31.

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ….……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

**[CRT Circuit]**

**10. Cb, Cr Offset**

**Purpose** To set Cb and Cr color signal level.

**Symptom:** Incorrect colors.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | White Raster (HD&NTSC) |
| **Input Terminal** | Video & DTV Inputs |

1. Supply an NTSC White Raster (25% luminance) signal to a Video Input.
2. Activate the Adjust Mode, VC Function
3. Set Item “23 COL” data to 63.
4. Adjust Items “60 CRO1” and “61 CBO1” for optimum white.
5. Set Item “23 COL” data to 31.
6. Save data and Exit the Service Mode.

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ….……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

**[Video Circuit]**

**11. Black Level**

**Purpose:** To set the black level of the picture.

**Symptom:** Excess or insufficient brightness.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | Monoscope |
| **Input Terminal** | Video Input |

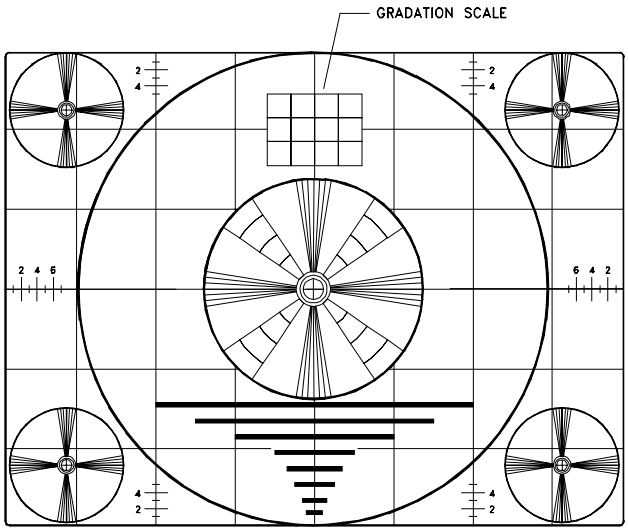
1. Supply a Monoscope signal to a Video Input.
2. Activate the Adjust Mode, VC Function.
3. Adjust Item "2 SBRT" so the 0% and 10% black levels on the gradation scale are the same.
4. Press ENTER to save data.
7. Exit the Service Mode.

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function ……..……AUDIO
Item No. ……..……VIDEO
Adjust Data ……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)

| | | | |
|---|---|---|---|
| 40% | 30% | 20% | 10% |
| 50% | 0% | 0% | 0% |
| 60% | 70% | 80% | 90% |

GRADATION SCALE




**[Video Circuit]**

**12. Sub Contrast**

**Purpose** To set overall beam current to its' optimum level.

**Symptom:** Excess or insufficient contrast.

| | |
|---|---|
| **Measuring Instrument** | DC ma meter |
| **Test Point** | DT connector pins 7 & 8 |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | Grayscale |
| **Input Terminal** | RF Input |

**Note: Activate the Expand mode (full screen).**

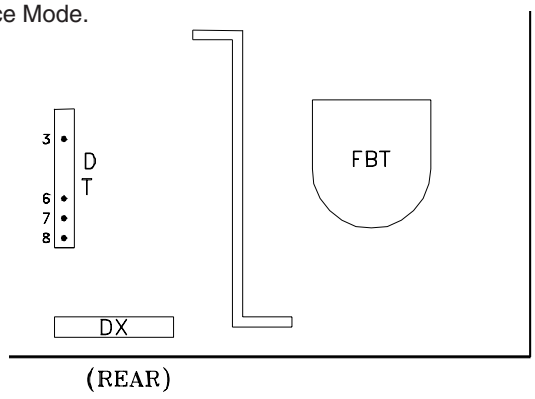
1. Supply a Grayscale signal to a RF Input.
2. Activate the Adjust Mode, VC Function.
3. Select Item "1 SCT", signal level automatically reduces.
4. Connect a 3ma DC meter between DT connector pins 7 and 8. Positive lead to pin 7.
5. Adjust Item "1 SCT" to the values given in the Table below.

| MODEL | CURRENT |
|---|---|
| 45 inch models | 540 ±5ua |
| 55 inch and 65 inch models | 595 ±5ua |
| 73 inch models | 620 ±5ua |

6. Remove the meter.
7. Save data and Exit the Service Mode.

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function ……..……AUDIO
Item No. ……..……VIDEO
Adjust Data ……..ADJUST
Save Data …. ……ENTER
Exit ……...MENU (twice)



**[Focus Circuit]**

**13. Dynamic Focus Preset**

**Purpose:** To improve edge focus.

**Symptom:** Poor focus at the edges of the screen.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | Monoscope |
| **Input Terminal** | Video Input |

1. Supply a Monoscope signal to a Video Input
2. Activate the Convergence Mode.
3. Select the DF Function under the Conv. Coarse Mode.
4. Set Items “0 DFH” and “1 DFV” to the data values given in the DF Table.
5. Press “6” to activate CONV-MISC
6. Set “0 FPHS” and “1 DPHS” to data values given in the CONV-MISC Table.
5. Exit the Conv. Mode.

**CONVERGENCE MODE**

Activate ……..MENU-2-1-5-9
Misc. ……..……"6"
Coarse……..…"5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

**DF**
(MENU-2-1-5-9-5)

| Item | Abbr. | Data |
|---|---|---|
| 1 | DFH | -500 |
| 2 | DFV | -100 |

**CONV MISC**
(MENU-2-1-5-9-6)

| Item | Abbr. | Data |
|---|---|---|
| 9 | DPHS | 0 |
| 10 | DOFS | 51 |

**[Video Circuit]**

**14. Lens Focus**

**Purpose** To set the Lens position for optimum focus.

**Symptom:** Poor focus

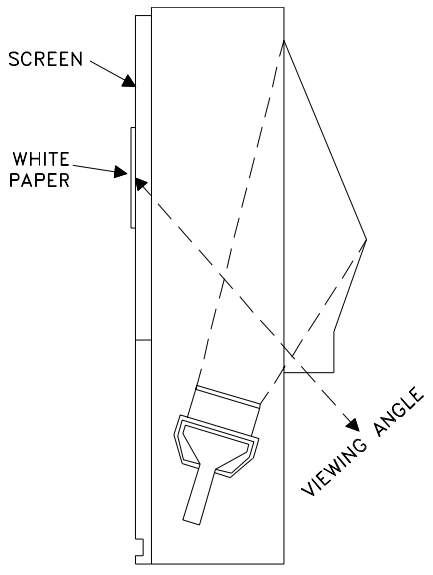
| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ------ |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | Monoscope |
| **Input Terminal** | Video Input |

**Note:** *This adjustment must be done before Electrostatic Focus. Perform this adjustment for RED, GREEN, and BLUE monochrome pictures.*

1. Supply a VIDEO signal (Monoscope).
2. Cover the Red and Blue Lens (producing a green raster).
3. Adjust the Green Lens for best focus at the center of the Monoscope pattern.

**Note:** *Attach a white paper to the screen center. During adjustment, observe the picture on the screen from inside for easier adjustment.*

4. Repeat Steps 2 and 3 for the Red and Blue monochrome pictures.



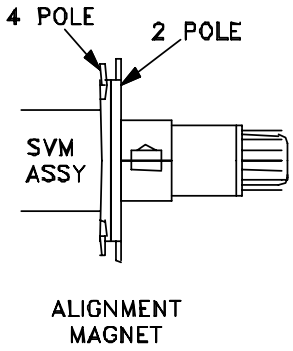
**[CRT Circuit]**

**15. Electrostatic Focus & (Alignment Magnet)**

**Purpose:** To set electrostatic focus to the optimum point.

**Symptom:** Poor focus.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | Monscope & Crosshatch |
| **Input Terminal** | Video Input |




**Note:** *This adjustment must be performed after the Sub Contrast adjustment.*

**Alignment Magnet Adjustment (WS-55711 / 65611 / 65711 / 65712 / 73711 Only)**

*This adjustment must be performed before Static Focus Adjustment*

1. Supply a Crosshatch with Center Dot signal to a Video Input.
2. Set the display format to Standard (Format button)
3. Select a Green raster using the table below.
4. Roughly adjust Green Focus VR.
5. Rotate Green Focus VR CCW so the center dot is about 10mm diameter.
6. Adjust the Green 4 Pole Magnet for the roundest center dot.
7. Set the Green Focus VR for optimum focus.
8. Repeat the procedure with a Red raster and adjust the Red 4 Pole Magnet.
9. Use silicon to lock the magnets in place.

**Static Focus Adjustment (All Models)**

1. Supply a Monoscope signal to a Video Input
2. Activate A/V Reset
3. Select Red, Green or Blue rasters using the table below.
3. Set the Red, Green and Blue Focus VRs for optimum focus in the center of the picture.

**Raster Color Selection**

| Color Raster | Activation Code |
|---|---|
| Red | MENU-2-1-5-9-1 |
| Green | MENU-2-1-5-9-2 |
| Blue | MENU-2-1-5-9-3 |

**[On Screen Display]**

**16.Character Position**

**Purpose** To position the character display horizontally.

**Symptom:** Incorrect display position

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ------ |
| **Input Signal** | Video Signal (HD/NTSC) |
| **Input Terminal** | ANT-A/DTV |

1. Supply an NTSC signal to Ant-A and select Ant-A as the source.
2. Enter the OSD Position Mode, press “MENU-2-1-8-8”.
3. Adjust “OSDSD” to center the OSD horizontally.
4. Press “MENU” to save data and exit the mode.
5. Supply a HD signal to the DTV inputs and select the DTV Inputs as the source.
6. Enter the OSD Position Mode, press “MENU-2-1-8-8”.
7. Adjust “OSDHD” to center the OSD horizontally.
3. Press “MENU” to save data and exit the mode.

**[Conv/Defl]**

**17. Geometry Preset**

**Purpose:** To preset data controlling raster geometry

**Symptom:** Raster distortion.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ------ |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | NTSC & HD |
| **Input Terminal** | Video & DTV Inputs |

**Note:** *This procedure is usually only necessary if an E2PROM is replaced in the TV Control, DM or Convergence circuits.*

**Procedure**

In the Circuit Adjustment and Coarse Convergence Modes pre-set the data to the values given in the Tables below.

**DEFL JUNGLE** (MENU-2-1-5-7)

| No. | Abbrev. | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|
| | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HWID | 16 | 20 | 33 | 38 | 31 | 35 | 33 | 36 |
| 2 | HKEY | 43 | 38 | 43 | 38 | 31 | 33 | 33 | 31 |
| 3 | EWPT | 22 | 23 | 22 | 23 | 22 | 25 | 24 | 22 |
| 5 | EWPB | 34 | 26 | 31 | 26 | 31 | 27 | 32 | 27 |
| 7 | VHGT | 30 | 23 | 27 | 23 | 27 | 35 | 34 | 32 |
| 8 | VLIN | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 9 | VSCN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | VPOS | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |

**CONV GREEN** (MENU-2-1-5-9-5)

| No. | Abbrev. | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|
| | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HSTA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | VSTA | -15 | 0 | -15 | 0 | -15 | 0 | -20 | 0 |
| 3 | SKEW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TILT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HWID | 30 | 30 | 30 | 30 | 30 | 30 | 20 | 20 |
| 6 | HLIN | 0 | 0 | -15 | -10 | -10 | -20 | -10 | -10 |
| 7 | SPCC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | HKEY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | TBPC | -150 | -150 | -200 | -190 | -200 | -170 | -220 | -180 |
| 10 | VKEY | 15 | 10 | 15 | 10 | 0 | 0 | 10 | 10 |
| 11 | VWID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | VLIN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**CONV RED** (MENU-2-1-5-9-5)

| No. | Abbrev. | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|
| | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HSTA | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| 2 | VSTA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | SKEW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TILT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HLIN | -190 | -190 | -180 | -170 | -150 | -150 | -220 | -190 |
| 6 | HWID | 0 | -10 | 0 | 0 | 10 | 10 | 10 | 10 |
| 7 | VKEY | -120 | -110 | -100 | -95 | -90 | -70 | -100 | -110 |
| 8 | VWID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | VLIN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | TBPC | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| 11 | HSBW | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

**CONV RED** (MENU-2-1-5-9-5)

| No. | Abbrev. | 48" Data | | 55" Data | | 65" Data | | 73" Data | |
|---|---|---|---|---|---|---|---|---|---|
| | | SD | HD | SD | HD | SD | HD | SD | HD |
| 1 | HSTA | -50 | -50 | -50 | -50 | -50 | -50 | -50 | -50 |
| 2 | VSTA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | SKEW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TILT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | HLIN | 200 | 190 | 175 | 170 | 160 | 150 | 230 | 200 |
| 6 | HWID | 0 | -30 | 0 | -10 | 0 | -10 | -20 | -20 |
| 7 | VKEY | 130 | 80 | 90 | 65 | 70 | 75 | 80 | 90 |
| 8 | VWID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | VLIN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | TBPC | 0 | -20 | 0 | 0 | 0 | -20 | -20 | 0 |
| 11 | HSBW | -30 | 30 | -30 | 30 | -30 | 30 | -30 | 30 |

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function …..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ….……..ADJUST
Save Data …. ……ENTER
Exit ……..MENU (twice)

**CONVERGENCE MODE**

Activate ……..MENU-2-1-5-9
Misc. ……..……"6"
Coarse……..…"5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

**[Deflection Circuit]**

**18: Deflection Geometry Height & Width Adjustment**

**Purpose:** To set the height, width and linearity of the raster.

**Symptom:** Incorrect height, width and/or linearity.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | Monoscope (NTSC & HD) |
| **Input Terminal** | Video & DTV Inputs |

**CIRCUIT ADJUST MODE**

Activate …….. MENU-2-1-5-7
Function ……..……..AUDIO
Item No. ……..……VIDEO
Adjust Data ……..ADJUST
Save Data …. ……ENTER
Exit ……..MENU (twice)

**Note:**
Always use the *Standard Format* when aligning Geometry and Convergence.

**Preliminary:**

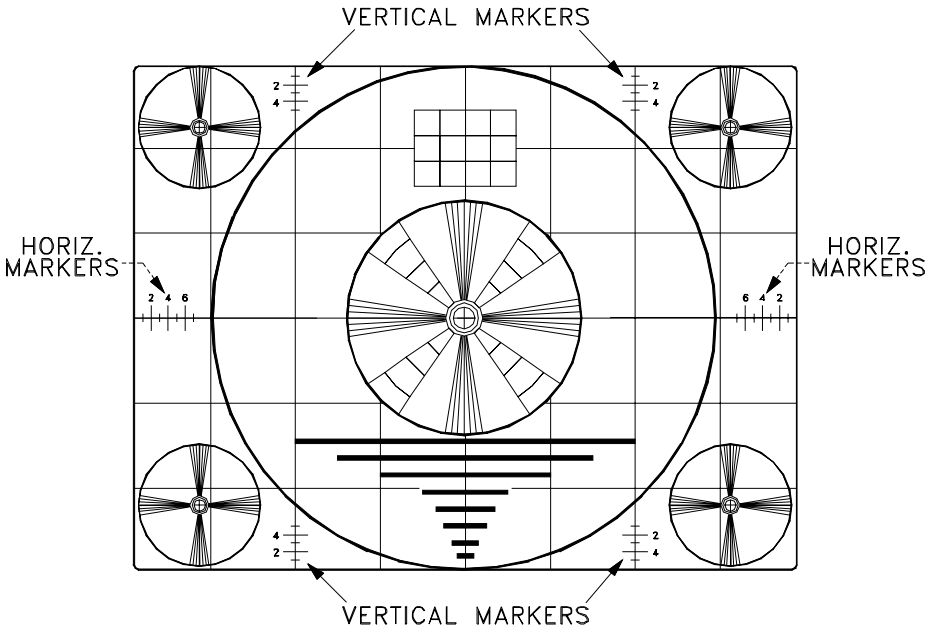
1. DO NOT change the initial values for "#8 VLIN" in the Defl. Jungle Function.
2. DO NOT exceed the following VHGT adjustment ranges:
   NTSC ... from -4 to +10
   HD ... from -10 TO +5

**NTSC Mode**

1. Supply an NTSC Monoscope signal to a Video Input.
2. Select the Monoscope as the signal source.
3. Activate the Adjustment Mode, JNGL Function.
4. Select and adjust each of the following items.
   - "7 VHGT" ... so the vertical marker sum = 4
   - "1 HWD" ... so the horizontal marker sum = 7
5. Save data and Exit the Service Mode.

**HD Mode**

1. Supply an HD Monoscope signal to the DTV HD Inputs.
2. Select the DTV Inputs as the signal source (Input button)
3. Activate the Service Mode, Defl. Jungle Function.
4. Select and adjust each of the following items.
   - "7 VHGT" ... so the vertical marker sum = 2
   - "1 HWD" ... so the horizontal marker sum = 5
5. Save data and Exit the Service Mode.



**[Convergence Circuit]**

**19. Convergence Geometry Adjustment**

**Purpose:** To set the Convergence circuit geometry adjustments.

**Symptom:** Raster distortion at the top, bottom or sides of the picture.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ------ |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | NTSC -- None<br>HD -- HD sync |
| **Input Terminal** | Video & DTV Inputs |

**Note:** *Deflection Circuit Geometry must be performed before this adjustment.*

**Note:**
Always use the *Standard Format* when aligning Geometry and Convergence.

**NTSC mode**

1. Select a Video Input with no signal.
2. Activate the Convergence Mode, Coarse Green.
3. Adjust the Coarse Green Items shown below for straight crosshatch lines.
4. Select the Fine Green Mode, a Cursor is displayed on the crosshatch.
5. Use the Cursor to adjust for straight crosshatch lines.
6. Exit the Convergence Mode.

**HD mode**

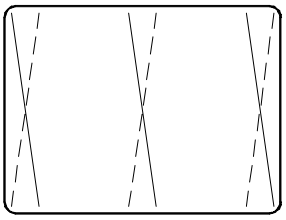
1. Supply horizontal and vertical HD sync to the DTV Inputs and select the DTV Inputs as the source.
   **Note:** I*f an HD signal is not available, select Ant-DTV, with no signal, as the source.*
2. Enter the Convergence Mode, Coarse Green.
3. Repeat NTSC Steps 3 through 6 in the HD mode.

**CONVERGENCE MODE**

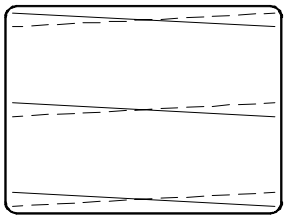
Activate ……..MENU-2-1-5-9
Misc. ……..……"6"
Coarse……..…"5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..…..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

## COARSE GREEN ADJUSTMENTS

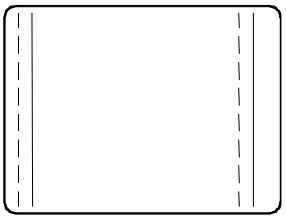
3 SKEW



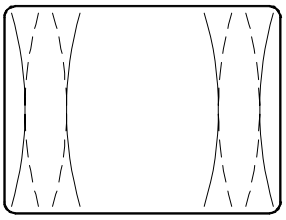
4 TILT



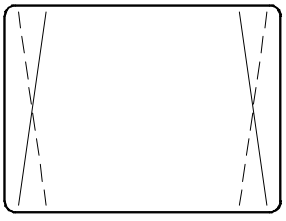
6 HLIN



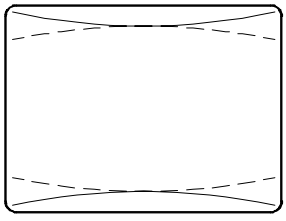
7 SPCC



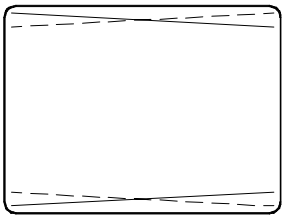
8 HKEY



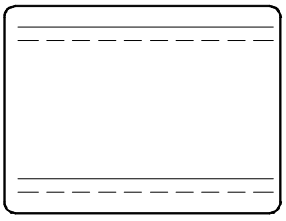
9 TBPC



10 VKEY



12 VLIN



**[Convergence Circuit]**

**20. Centering and Static Convergence**

**Purpose:** To converge red, green and blue at the center of the screen

**Symptom:** Color edging over the entire picture.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | NTSC -- Monoscope<br>HD -- Monoscope |
| **Input Terminal** | Video & DTV Inputs |

**CONVERGENCE MODE**

Activate ……..MENU-2-1-5-9
Misc. ……..……"6"
Coarse……..…"5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..…..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

**Preliminary**

Degauss the shield cover and bracket unit of the CRT assembly and chassis.
**DO NOT** degauss the CPM Assemblies.

**HD mode**

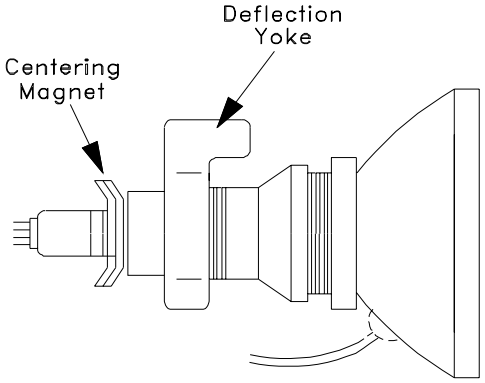
1. Supply an HD Monoscope signal to the DTV Inputs.
2. Select the DTV Inputs as the signal source (Input button).
3. Enter the Convergence Coarse mode.
4. Set the data for the "HSTA" and "VSTA" items to:

| GREEN | RED | BLUE |
|---|---|---|
| HSTS = 0 | HSTA = 50 | HSTA = -50 |
| VSTA = 0 | VSTA = 0 | VSTA = 0 |

5. In the Coarse Green mode:
   - Center the Green Raster using the Green Centering Magnet.
   - Rotate the Green Deflection Yoke to correct any tilt.
6. In the Coarse Red mode, use the Red Centering Magnet to converge red on the green at the center of screen. Correct any red tilt with the Red Deflection Yoke.
7. In the Coarse Blue mode, repeat Step 6 using the Blue Centering magnet and the Blue Deflection Yoke.
8. Exit the Convergence mode.

**SD mode**

1. Supply an NTSC Monoscope signal to a Video Input.
2. Select the Monoscope as the signal source (Input button).
3. Enter the Convergence Coarse Green mode.
4. Confirm that the Green Raster is centered.



**[Convergence Circuit]**

**21. Coarse Convergence**

**Purpose:** To converge red and blue on green at the edges of the screen.

**Symptom:** Color edging at the top, bottom and sides of the screen.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ------ |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | NTSC -- None<br>HD -- HD sync |
| **Input Terminal** | Video & HD Inputs |

**CONVERGENCE MODE**

Activate ……..MENU-2-1-5-9
Misc. ……"6"
Coarse……..…"5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

**Note:**
Always use the *Standard Format* when aligning Geometry and Convergence.

**SD mode**

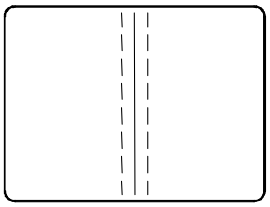
1. Select an External Input with no signal.
2. Activate the Convergence Mode, Coarse Red.
3. Adjust the Items shown below to converge the red on the green.
4. Select Coarse Blue mode.
5. Adjust the Items shown below to converge the blue on the green.
   **Note:** *If center convergence shifts, use red and blue Items "0 HSTA" and "1 VSTA" to correct the shift.*
6. Exit the Convergence Mode.

**HD mode**

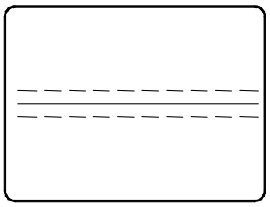
1. Supply horizontal and vertical HD sync to the DTV Inputs and select the DTV Inputs as the source.
   **Note:** I*f an HD signal is not available, select Ant-DTV, with no signal, as the source.*
2. Repeat SD Steps 2 through 5 in the HD mode.
3. Exit the Convergence mode.

## COARSE CONVERGENC RED & BLUE ADJUSTMENTS

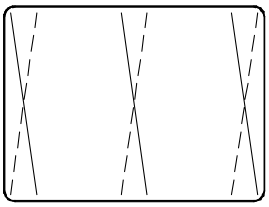
1 HSTA*



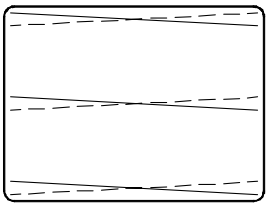
2 VSTA*



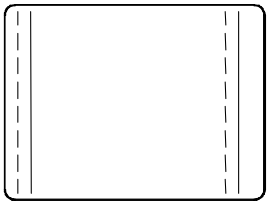
3 SKEW



4 TILT

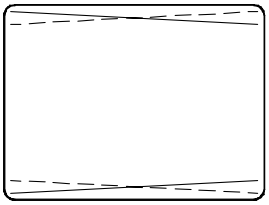


5 HLIN

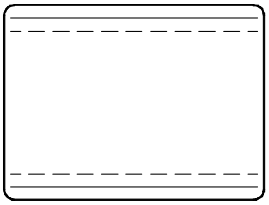


6 HWID

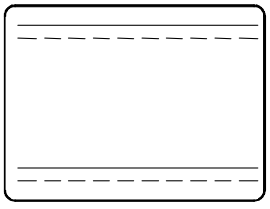
7 VKEY



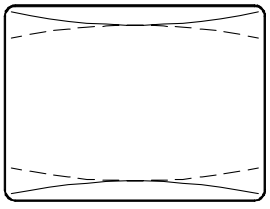
8 VWID



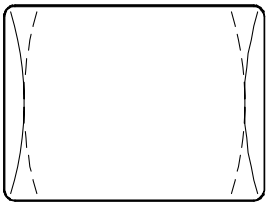
9 VLIN



10 TBPC



11 HSBW



*** Data should not exceed ±100**

**[Convergence Circuit]**

**22. Fine Convergence**

**Purpose:** To converge red, green and blue at the edges of the screen

**Symptom:** Color edging at the edges of the picture.

| | |
|---|---|
| **Measuring Instrument** | ----- |
| **Test Point** | ----- |
| **Ext. Trigger** | ------ |
| **Measuring Range** | ----- |
| **Input Signal** | NTSC -- None<br>HD -- HD sync |
| **Input Terminal** | Video & DTV Inputs |

**CONVERGENCE MODE**

Activate ……..MENU-2-1-5-9
Misc. ……..…."6"
Coarse……..…."5"
Fine ……..."4"
Color (R,G or B)……AUDIO
Item No……..VIDEO
Adjust/Move…….ADJUST
Cursor Toggle……..ENTER
Save & Exit…..MENU (twice)

**Note:**
Always use the *Standard Format* when aligning Geometry and Convergence.

**SD Fine Adjustment**

1. Select an External Input, no signal.
2. Activate the Convergence Mode, Fine Red.
3. Use the Cursor to converge red on the green.
4. Select the Fine Blue mode.
5. Use the Cursor to converge blue on the green.
6. Exit the Convergence mode.

**HD Fine Adjustment**

1. Supply an HD signal (sync only) to the DTV inputs and select DTV with the "Audio" button.
   **Note:** I*f an HD signal is not available, select Ant-DTV, with no signal, as the source.*
2. Repeat SD Fine Adjustment Steps 2 through 6, in the HD mode.

# CHIP PARTS REPLACEMENT

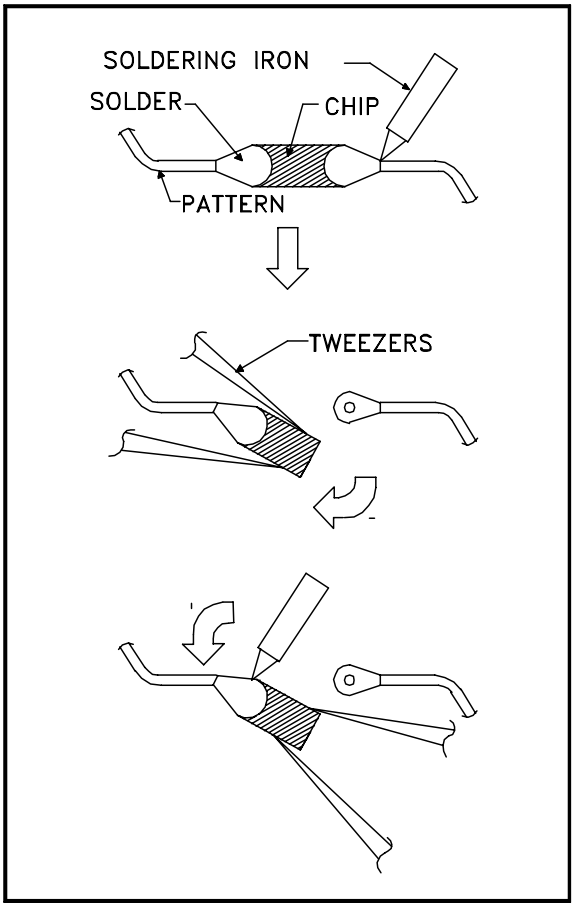
Some resistors, shorting jumpers (0 Ohm resistors), ceramic capacitors, transistors and diodes are chip parts. The following precautions should be taken when replacing these parts.

**Cautions:**

1. Use a fine tipped, well insulated soldering iron (approximately 30 watts), and tweezers.
2. Melt the solder and remove the chip parts carefully so as not to tear the copper foil from the printed circuit board.
3. Discard removed chips; do not reuse them.
4. Do not apply heat for more than 3 (three) seconds to new chip parts.
5. Avoid using a rubbing stroke when soldering.
6. Take care not to scratch, or damage the chip parts when soldering.
7. Supplementary cementing is not required.

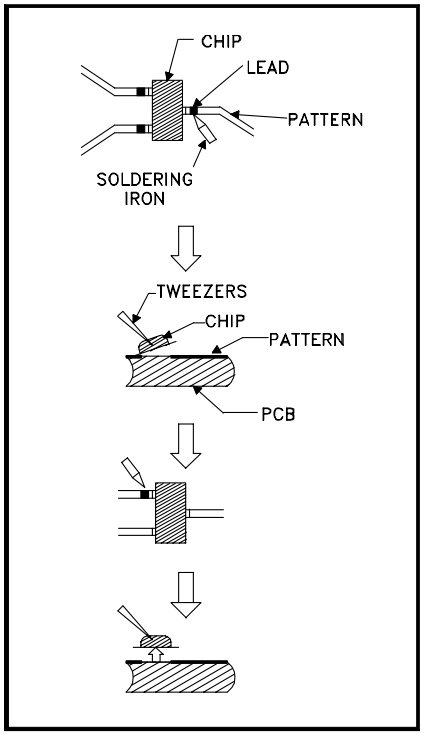
**Chip Parts Removal (Resistors, Capacitors, etc.)**

1. Grasp the part with tweezers. Melt the solder at both sides alternately, and remove one side of the part with a twisting motion.
2. Melt the solder at the other side and remove the part.



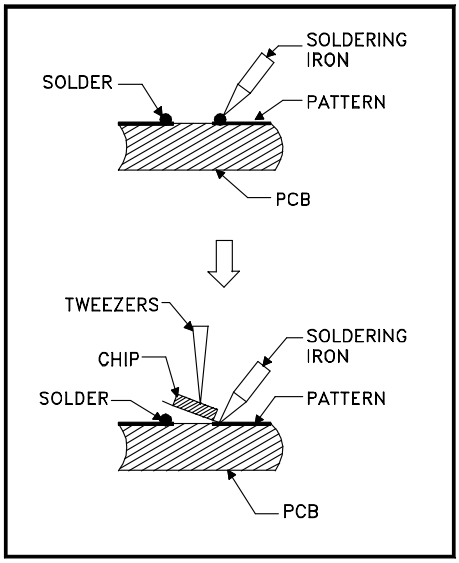

**Chip Parts Removal (Transistors)**

1. Melt the solder of one lead and lift the side of that lead upward.
2. Simultaneously melt the solder of the other two leads and lift the part from the PCB.




**Replacement**

1. Presolder the contact points on the circuit pattern.
2. Press the part downward with tweezers and apply the soldering iron as shown.



# REPLACEMENT PARTS

**Parts Ordering**

To expedite delivery of replacement parts orders, specify the following:

1. Model Number/Serial Number
2. Part Number and description
3. Quantity

**Note:** Unless complete information is supplied, delay in processing of orders will result.

**Critical and Warranty Parts Designation**

**Critical Electrical Components** are indicated by **Bold Type** in the Parts List, and in the schematic diagrams by shading.

**Warranty Return Parts** are indicated in the Parts List with an **(*)**.

**Parts Tolerance Codes**

Refer to the following chart for tolerance characteristics of electrical components.

| MARK | B | C | D | F | G | J | K |
|---|---|---|---|---|---|---|---|
| Tolerance % | ± 0.1 | ± 0.25 | ± 0.5 | ± 1 | ± 2 | ± 5 | ± 10 |

| MARK | M | N | V | X | Z | P | Q |
|---|---|---|---|---|---|---|---|
| Tolerance % | ± 20 | ± 30 | ± 10 | + 40<br>-20 | + 80<br>-20 | + 100<br>- 0 | + 30<br>-10 |

| MARK | M | N | V | X | Z |
|---|---|---|---|---|---|
| Tolerance (pF) | ± 0.1 | ± 0.25 | ± 0.5 | ± 1 | ± 2 |

QUICK REFERENCE FOR COMMON REPLACEMENT PARTS

## CRT ASSEMBLIES

| MODEL | ASSY-CRT-RED | ASSY-CRT-RED | ASSY-CRT-RED |
|---|---|---|---|
| WS-48511 | 251C222010 | 251C222020 | 251C222030 |
| WS-B55 | 251C221070 | 251C221080 | 251C221090 |
| WS-55511 | 251C219040 | 251C219050 | 251C219060 |
| WS-55711 | 251C219070 | 251C219080 | 251C219090 |
| WS-65511 | 251C220010 | 251C220020 | 251C220030 |
| WS-65611 | 251C220040 | 251C220050 | 251C220060 |
| WS-65711 | 251C220070 | 251C220080 | 251C220090 |
| WS-65712 | 251C221010 | 251C221020 | 251C221030 |
| WS-73711 | 251C221040 | 251C221050 | 251C221060 |

## REMOTE CONTROL

| | | |
|---|---|---|
| | 290P109010 | REMOTE CONTROL |

## HIGH VOLTAGE / DEFLECTION COMPONENTS

| | | | |
|---|---|---|---|
| **Q5A31** | **261P071010** | **HORIZ-OUT 2SC5418 RL** | |
| **Q5A51** | **261P082010** | **HV-OUT 2SK2771-O1R** | |
| **T5A51** | **334P278010** | **TRANS-FLYBACK** | |
| | **920P016010** | **HV-BLOCK** | |
| | 129P059050 | VR-FOCUS | |
| | 338P054010 | SVM COIL | WS-B55 / WS-48511 / WS-55511 / WS-65511 |
| | 338P054020 | SVM COIL | WS-55711 / WS-65611 / WS-65711 / WS-65712/ WS-73711 |
| | **330P276050** | **DEFL-YOKE** | |
| | **453B035010** | **CAP-ANODE-SHORT-RED** | **All but WS-73711** |
| | **453B035020** | **CAP ANODE-LONG-G&B** | **All but WS-73711** |
| | **453B035030** | **CAP-ANODE-SHORT-RED** | **WS-73711 only** |
| | **453B035040** | **CAP ANODE-LONG-G&B** | **WS-73711 only** |

## MISCELLANEOUS

| MODEL | MIRROR | LENTICULAR SCREEN | FRESNEL LENS |
|---|---|---|---|
| WS-48511 | 767D072040 | 491P138010 | 491P139010 |
| WS-B55 | 767D072030 | 491P103030 | 491P104030 |
| WS-55511 | " | " | " |
| WS-55711 | 767D055040 | " | " |
| WS-65511 | 767D048090 | 491P105030 | 491P106050 |
| WS-65611 | " | " | " |
| WS-65711 | " | " | " |
| WS-65712 | " | 491P105040 | 491P106060 |
| WS-73711 | 767C031010 | 491P085030 | 491P086030 |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| | | **TUBES** | |
| | **251C219040** | **ASSY-CRT-RED** | **3** |
| | **251C219050** | **ASSY-CRT-GREEN** | **3** |
| | **251C219060** | **ASSY-CRT-BLUE** | **3** |
| | **251C219070** | **ASSY-CRT-RED** | **4** |
| | **251C219080** | **ASSY-CRT-GREEN** | **4** |
| | **251C219090** | **ASSY-CRT-BLUE** | **4** |
| | **251C220010** | **ASSY-CRT-RED** | **5** |
| | **251C220020** | **ASSY-CRT-GREEN** | **5** |
| | **251C220030** | **ASSY-CRT-BLUE** | **5** |
| | **251C220040** | **ASSY-CRT-RED** | **6** |
| | **251C220050** | **ASSY-CRT-GREEN** | **6** |
| | **251C220060** | **ASSY-CRT-BLUE** | **6** |
| | **251C220070** | **ASSY-CRT-RED** | **7** |
| | **251C220080** | **ASSY-CRT-GREEN** | **7** |
| | **251C220090** | **ASSY-CRT-BLUE** | **7** |
| | **251C221010** | **ASSY-CRT-RED** | **8** |
| | **251C221020** | **ASSY-CRT-GREEN** | **8** |
| | **251C221030** | **ASSY-CRT-BLUE** | **8** |
| | **251C221040** | **ASSY-CRT-RED** | **9** |
| | **251C221050** | **ASSY-CRT-GREEN** | **9** |
| | **251C221060** | **ASSY-CRT-BLUE** | **9** |
| | **251C221070** | **ASSY-CRT-RED** | **1** |
| | **251C221080** | **ASSY-CRT-GREEN** | **1** |
| | **251C221090** | **ASSY-CRT-BLUE** | **1** |
| | **251C222010** | **ASSY-CRT-RED** | **2** |
| | **251C222020** | **ASSY-CRT-GREEN** | **2** |
| | **251C222030** | **ASSY-CRT-BLUE** | **2** |
| | | **INTEGRATED CIRCUITS** | |
| IC10 | 270P806030 | IC - SI-3018LSA | |
| IC20 | 270P877010 | IC - UPC3217GV | |
| IC2A00 | 270P870010 | IC - CXA2151Q | |
| IC2A60 | 272P938010 | IC - M52055FP | |
| IC2B00 | 270P870010 | IC - CXA2151Q | |
| IC2C00 | 275P496010 | IC-C-MOS - UPD64082GF-3BA | |
| IC2C01 | 275P531010 | IC-C-MOS - MSM54V16258B-45TS-K | |
| IC2D01 | 272P379020 | IC - LM1881MX (NSC) | |
| IC2E00 | 270P658030 | IC - CXA2019AQ/T4 | |
| IC2F50 | 272P379020 | IC - LM1881MX (NSC) | |
| IC2F60 | 272P379020 | IC - LM1881MX (NSC) | |
| IC2F70 | 275P718010 | IC-C-MOS - TC74HC4053FT | |
| IC2F80 | 275P718010 | IC-C-MOS - TC74HC4053FT | |
| IC2H00 | 270P658030 | IC - CXA2019AQ/T4 | |
| IC2K00 | 270P623010 | IC - CXA2069Q | |
| IC2L00 | 270P623010 | IC - CXA2069Q | |
| IC2V00 | 270P663020 | IC - CXA2101AQ | |
| IC2V90 | 275P419010 | IC-C-MOS - SN74AHCT1G126DBV | |
| IC2Y01 | 270P526020 | IC - MM1111XF | |
| IC3A01 | 270P467010 | IC - TDA9855 | |
| **IC3E01** | **270P750010** | **IC - LA4663** | |
| IC40 | 270P878010 | IC - UPC1663G | |
| IC4A01 | 270P664010 | IC - CXA2102Q | |
| IC4A02 | 270P575030 | IC - NJM78M09DLA-TE1 | 1 |
| IC4A02 | 270P950010 | IC - NJM78M09DL1A(TE1) | |
| IC4A03 | 263P384010 | IC-C-MOS - TC74HC221AF-EL | |
| **IC4B01** | **270P261020** | **IC - TDA8177** | |
| IC5100 | 275P686010 | IC-C-MOS - TSB41AB3PFP | |
| IC5101 | 275P624010 | IC-C-MOS - TSB42AA4 | |

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| IC5102 | 274P670010 | IC - 24LC04BT*SN | |
| IC5103 | 275P679010 | IC-C-MOS - TC74LCX74FT | |
| IC5200 | 275P556020 | IC-C-MOS - TC74LCX08FT | |
| IC5290 | 270P677030 | IC - BAO9FP | |
| IC5300 | 275P684010 | IC-C-MOS - TL810B | |
| IC5300 | 669D544020 | SCREW-SEMS-W - M3X0.5-12 | |
| **IC5301** | **275P672010** | **IC-C-MOS - RM5231-200Q** | |
| IC5302 | 275P675010 | IC-C-MOS - SN74LV125APWR | |
| IC5303 | 275P666010 | IC-C-MOS - MAX6358SYUT-T | |
| IC53A0 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC53A1 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC53A2 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC53A3 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC5400 | 275P677010 | IC-C-MOS - SN74LVC573APWR | |
| IC5401 | 275P670020 | IC-C-MOS - MT28F400B3WG-9T | |
| IC5403 | 275P864010 | IC-C-MOS - MD2211-D16-V3 | |
| IC5407 | 275P124040 | IC-C-MOS - SN74LVC245APWR | |
| IC5408 | 275P665010 | IC-C-MOS - M66230FP | |
| IC5409 | 275P421010 | IC-C-MOS - SN74AHCT00D | |
| IC5410 | 275P122020 | IC-C-MOS - SN74LV32APWR | |
| IC5411 | 275P674010 | IC-C-MOS - SN74LV123APWR | |
| IC5412 | 275P664010 | IC-C-MOS - IDTQS34XVH245Q3 | |
| IC54A0 | 275P726010 | IC-C-MOS - PIC17C43T-25/L | |
| IC54K1 | 275P673010 | IC-C-MOS - RTC-8563SA | |
| IC54K5 | 275P270010 | IC-C-MOS - M66010GP | |
| IC54Z1 | 275P657040 | IC-C-MOS - AT24C256N-10SC/SI-2.7 | 1 |
| IC54Z1 | 275P657050 | IC-C-MOS - 24LC256T-I/SN | |
| IC54Z3 | 275P657040 | IC-C-MOS - AT24C256N-10SC/SI-2.7 | 1 |
| IC54Z3 | 275P657050 | IC-C-MOS - 24LC256T-I/SN | |
| IC54Z4 | 270P880010 | IC - 24LC64I/SN | |
| IC5500 | 275P903010 | IC-C-MOS - VPC3230-QA-C5 | |
| IC55A0 | 275P685040 | IC-C-MOS - TL850D | |
| IC55A0 | 669D544020 | SCREW-SEMS-W - M3X0.5-12 | |
| IC55A2 | 275P669010 | IC-C-MOS - MK2771-15 | |
| IC55A3 | 275P689010 | IC-C-MOS - ICS551MT | |
| IC55A4 | 275P689010 | IC-C-MOS - ICS551MT | |
| IC55A5 | 275P680010 | IC-C-MOS - TC74VCX257FT | |
| IC55A6 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC55A7 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC55A8 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC55A9 | 275P741020 | IC-C-MOS - MT48LC8M16A2TG-75 | |
| IC55C0 | 275P221020 | IC-C-MOS - SN74LVC04APW | |
| IC55C2 | 275P668010 | IC-C-MOS - MK2716STR | |
| IC55C3 | 275P680010 | IC-C-MOS - TC74VCX257FT | |
| IC55C4 | 275P680010 | IC-C-MOS - TC74VCX257FT | |
| IC55C5 | 275P683010 | IC-C-MOS - TC74VCX16374FT | |
| IC55C6 | 275P683010 | IC-C-MOS - TC74VCX16374FT | |
| IC55C8 | 275P682010 | IC-C-MOS - TC74VCX16244FT | |
| IC55C9 | 275P682010 | IC-C-MOS - TC74VCX16244FT | |
| IC55E0 | 279P069030 | IC - SN74LVTH244APW | |
| IC55E1 | 275P464010 | IC-C-MOS - TC7WH14FK | |
| IC55E2 | 275P388010 | IC-C-MOS - ICS1523M | |
| IC55E3 | 275P679010 | IC-C-MOS - TC74LCX74FT | |
| IC55F0 | 267P158010 | HIC - AF-9317B | |
| IC5600 | 275P379020 | IC-C-MOS - SN74LVC00APW | |
| IC5601 | 275P659010 | IC-C-MOS - CS8414-CSR | |
| IC5602 | 279P069030 | IC - SN74LVTH244APW | |
| IC5603 | 275P661040 | IC-C-MOS - CS493002-CLR | |
| IC5604 | 275P678010 | IC-C-MOS - SN74LVTH16374DGG | |
| IC5605 | 274D104020 | IC-C-MOS - AUDIO_ROM_FOR_DM | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| IC5606 | 275P464010 | IC-C-MOS - TC7WH14FK | |
| IC5607 | 275P660010 | IC-C-MOS - CS4341-KSR | |
| IC5670 | 270P938010 | IC - MC33202D | |
| IC56A0 | 275P169030 | IC-C-MOS - M65677FP | |
| IC56C0 | 275P663090 | IC-C-MOS - M4A3-32/32-10VC | |
| IC5900 | 270P953010 | IC - MIC39300-2.5BU | |
| IC59P0 | 270P879010 | IC - SC1566IM-2.5 | |
| **IC5A00** | **267P143020** | **KIC - MSPAD101** | |
| IC5A01 | 272P237010 | IC - LA6324N | |
| IC5A02 | 266P154010 | IC - UPC393C | |
| **IC5A03** | **270P704010** | **IC - LM4040BIZ-10.0** | |
| IC5A05 | 270P816010 | IC - NJM431L | |
| IC5F00 | 263P479010 | IC-C-MOS - TC74HC123AF | |
| IC60 | 275P715010 | IC-C-MOS - BCM3510KPF | 1 |
| IC60 | 275P715020 | IC-C-MOS - BCM3510KPF P22 | |
| **IC6B01** | **270P667010** | **IC - TDA6120Q** | |
| **IC6G01** | **270P667010** | **IC - TDA6120Q** | |
| **IC6R01** | **270P667010** | **IC - TDA6120Q** | |
| IC70 | 275P662010 | IC-C-MOS - CY7C1019BV33-15V | |
| **IC7A00** | **275P770040** | **IC-C-MOS - M306VOME-178FP** | |
| IC7A01 | 275P533010 | IC-C-MOS - M24C64WM6T | |
| IC7A02 | 270P706010 | IC - MAX823 | |
| IC7A03 | 270P873010 | IC - SN74CBT1G125DBVR | |
| IC7A04 | 270P873010 | IC - SN74CBT1G125DBVR | |
| IC7B00 | 274P901010 | IC-C-MOS - TC74HCT7007AF-EL | |
| IC7B80 | 263P154010 | IC-C-MOS - SN74HC132DB | |
| IC7C30 | 275P419010 | IC-C-MOS - SN74AHCT1G126DBV | |
| IC7D00 | 275P451010 | IC-C-MOS - TC74HC4066AFN-ELP | |
| IC7D01 | 275P560010 | IC - ADS931E A2D CONVERTER | |
| IC7D02 | 275P560010 | IC - ADS931E A2D CONVERTER | |
| IC7D03 | 275P560010 | IC - ADS931E A2D CONVERTER | |
| IC7D10 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7D11 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7E00 | 275P451010 | IC-C-MOS - TC74HC4066AFN-ELP | |
| IC7E01 | 275P560010 | IC - ADS931E A2D CONVERTER | |
| IC7E02 | 275P560010 | IC - ADS931E A2D CONVERTER | |
| IC7E03 | 275P560010 | IC - ADS931E A2D CONVERTER | |
| IC7E10 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7E11 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7G01 | 275P247010 | IC-C-MOS - MB40C958VPFV | |
| IC7G04 | 275P534010 | IC-C-MOS - TC74HCT574AFW-ELP | |
| IC7G05 | 275P534010 | IC-C-MOS - TC74HCT574AFW-ELP | |
| IC7H00 | 275P714010 | IC-C-MOS - NT56V1616A0T-7 | |
| IC7H01 | 275P714010 | IC-C-MOS - NT56V1616A0T-7 | |
| IC7H02 | 275P436030 | IC-C-MOS - TMC57127PPM | |
| IC7H03 | 275P439030 | IC-C-MOS - MSM534031E-*TS-K | |
| IC7H04 | 270P506010 | IC - M51957BFP | |
| IC7H05 | 263P384010 | IC-C-MOS - TC74HC221AF-EL | |
| IC7H06 | 270P348010 | IC - TLC2932IPW | |
| IC7H07 | 275P437020 | IC - SLA4028 | |
| IC7H08 | 270P348010 | IC - TLC2932IPW | |
| IC7H09 | 274P901010 | IC-C-MOS - TC74HCT7007AF-EL | |
| IC7H11 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7H12 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7H13 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7H14 | 275P535010 | IC-C-MOS - TC74AC157FN-ELP | |
| IC7K21 | 270P831010 | IC-C-MOS - OPA2350PA | |
| IC7V01 | 275P362010 | IC-C-MOS - Z86130 | |
| IC80 | 266P419040 | IC - M5223AFP | |
| IC800 | 275P595010 | IC-C-MOS - CM0022AF | |

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| IC801 | 275P615010 | IC-C-MOS - AT24C32N-10SI | |
| IC802 | 270P751010 | IC - TL084CD | |
| IC803 | 270P751010 | IC - TL084CD | |
| IC804 | 270P751010 | IC - TL084CD | |
| **IC8C01** | **267P155010** | **HIC - STK393-110** | |
| IC8E01 | 270P817010 | IC - L4931CDT33-TR | |
| IC8E02 | 272P603010 | IC - LM78L05ACZ/NJM78L05A | |
| IC8E03 | 275P721010 | IC-C-MOS - CD0031AM | |
| **IC9A20** | **267P159010** | **HIC - STR-G6623** | |
| **IC9A21** | **270P816010** | **IC - NJM431L** | |
| **IC9A22** | **267P076030** | **HIC - SI-3050C** | |
| **IC9A50** | **267P140020** | **HIC - STR-F6628** | |
| **IC9A51** | **267P062050** | **HIC - SE110N** | |
| IC9B00 | 270P872010 | IC - HIP6006CB | |
| IC9C00 | 270P472060 | IC - NJM7805FA | |
| IC9C01 | 270P210010 | IC - NJM7809FA/AN7809F | |
| IC9C02 | 270P210010 | IC - NJM7809FA/AN7809F | |
| IC9C03 | 270P950010 | IC - NJM78M09DL1A(TE1) | |
| IC9C20 | 267P131010 | HIC - SI-3033C | |
| IC9C40 | 267P076030 | HIC - SI-3050C | |
| IC9C50 | 270P817010 | IC - L4931CDT33-TR | |

## TRANSISTORS

**TR-CHIP Type (Listed by Generic Number)**

| Part No. | Description |
|---|---|
| 260P806010 | DTA124EK/UN2112 |
| 260P807030 | DTC124EKAT146 |
| 260P817010 | 2SA1037K-Q |
| 260P817020 | 2SA1037K-R |
| 260P817030 | 2SA1037K-S |
| 260P818010 | 2SC2412K-Q |
| 260P818030 | 2SC2412K-S |
| 260P835030 | 2SC2413K-Q |
| 260P836090 | 2SC3326-A,B |
| 260P846030 | DTC143ZKAT146 |
| 261P119010 | 2SC3583 |
| 261P801010 | 2SA1252-5,6 |

**Conventional Transistors (By Ref #)**

| Ref # | Part No. | Description |
|---|---|---|
| Q4B01 | 260P559030 | TR - 2SC1740S-S |
| Q54A2 | 261P114010 | TR - 2SA1585STPR |
| **Q5A01** | **260P788020** | **TR - 2SC4690-O,R** |
| Q5A02 | 260P561020 | TR - 2SA1371-E |
| Q5A03 | 260P386010 | TR - 2SC2230-GR |
| Q5A04 | 260P559030 | TR - 2SC1740S-S |
| Q5A05 | 260P560040 | TR - 2SA933S-S |
| Q5A06 | 260P560040 | TR - 2SA933S-S |
| Q5A07 | 261P123010 | TRANSISTOR - UNR4113-S |
| Q5A08 | 260P325030 | TR - 2SC2655-Y |
| Q5A10 | 260P603010 | TR - DTA124ES/UN4112 |
| **Q5A31** | **261P071010** | **TR - 2SC5418 RL** |
| Q5A32 | 260P587040 | TR - 2SC2333-M,L |
| Q5A33 | 260P559030 | TR - 2SC1740S-S |
| Q5A34 | 260P561020 | TR - 2SA1371-E |
| Q5A35 | 260P386010 | TR - 2SC2230-GR |
| **Q5A36** | **260P630010** | **TR - 2SD2012** |
| Q5A37 | 260P559030 | TR - 2SC1740S-S |
| Q5A38 | 260P559030 | TR - 2SC1740S-S |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| **Q5A51** | **261P082010** | **TR - 2SK2771-01R** | |
| Q5H05 | 260P559050 | TR - 2SC1740S-E | |
| Q5H06 | 260P560040 | TR - 2SA933S-S | |
| Q5H08 | 260P559050 | TR - 2SC1740S-E | |
| Q5H09 | 260P559050 | TR - 2SC1740S-E | |
| Q5H10 | 260P560040 | TR - 2SA933S-S | |
| Q5H11 | 260P644040 | TR - 2SA1535-R | |
| Q5H12 | 260P647040 | TR - 2SC3944-R | |
| Q5K00 | 260P664030 | TR - 2SC4636 | |
| Q5K01 | 260P664030 | TR - 2SC4636 | |
| Q5K02 | 260P559050 | TR - 2SC1740S-E | |
| Q5K03 | 260P560040 | TR - 2SA933S-S | |
| Q6B01 | 260P560040 | TR - 2SA933S-S | |
| Q6B02 | 260P560040 | TR - 2SA933S-S | |
| Q6G01 | 260P560040 | TR - 2SA933S-S | |
| Q6R01 | 260P560040 | TR - 2SA933S-S | |
| Q7C31 | 261P114010 | TR - 2SA1585STPR | |
| Q7K21 | 260P559030 | TR - 2SC1740S-S | |
| Q9A20 | 261P101010 | TR - PHP21N06T | |
| Q9A21 | 260P559030 | TR - 2SC1740S-S | |
| Q9A22 | 260P559030 | TR - 2SC1740S-S | |
| Q9A50 | 260P416030 | TR - 2SC2274-F,K-F | |
| Q9A51 | 260P559030 | TR - 2SC1740S-S | |
| Q9A53 | 260P559030 | TR - 2SC1740S-S | |
| Q9A54 | 260P559030 | TR - 2SC1740S-S | |
| Q9B00 | 261P136010 | TRANSISTOR - FDS6680A | |
| Q9B01 | 261P136010 | TRANSISTOR - FDS6680A | |
| Q9B02 | 261P133010 | TR - FDS6612A | |
| | | **DIODES** | |
| D2J04 | 264P485060 | DIODE - RD7.5FB2 | |
| D2J05 | 264P485060 | DIODE - RD7.5FB2 | |
| D2J91 | 264P485060 | DIODE - RD7.5FB2 | |
| D2M22 | 264P822010 | D-CHIP - HSM2838 | |
| D2V44 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D2W01 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D2W02 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D2W05 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D2W06 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D4B01 | 264D056020 | DIODE - S5500D/EM1Z/ERB12-02RK | |
| D4B04 | 264P045040 | DIODE - 1S24710M | |
| D54K0 | 264P808010 | DIODE-CHIP - DAN202K | |
| D5A01 | 264P045040 | DIODE - 1S24710M | |
| D5A02 | 264D056020 | DIODE - S5500D/EM1Z/ERB12-02RK | |
| D5A12 | 264P045040 | DIODE - 1S24710M | |
| D5A13 | 264P483070 | DIODE - RD5.1FB1 | |
| D5A14 | 264P045040 | DIODE - 1S24710M | |
| D5A31 | 262P032010 | DIODE - FMV-G2GS | |
| D5A33 | 264P669030 | DIODE - S3L20U | |
| D5A34 | 264P483070 | DIODE - RD5.1FB1 | |
| D5A35 | 264P045040 | DIODE - 1S24710M | |
| D5A36 | 264P045040 | DIODE - 1S24710M | |
| D5A37 | 264P521040 | DIODE - EU1A | |
| D5A51 | 262P039010 | DIODE - BYW96E/20 | |
| D5A52 | 264P899010 | DIODE - BYV26E | |
| D5A53 | 264P489010 | DIODE - RD16FB1 | |
| D5A54 | 264P724010 | DIODE - STF14 | |
| D5A55 | 264P724010 | DIODE - STF14 | |
| D5A56 | 264P045040 | DIODE - 1S24710M | |
| D5A57 | 264P521040 | DIODE - EU1A | |
| D5A58 | 264P045040 | DIODE - 1S24710M | |
| D5A59 | 264P045040 | DIODE - 1S24710M | |
| D5A60 | 264P489010 | DIODE - RD16FB1 | |
| D5F00 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D5F01 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D5F02 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D5H01 | 264P045040 | DIODE - 1S24710M | |
| D5H02 | 264P045040 | DIODE - 1S24710M | |
| D5H03 | 264P045040 | DIODE - 1S24710M | |
| D5H04 | 264P045040 | DIODE - 1S24710M | |
| D5K01 | 264P528030 | DIODE - RP1H | |
| D5K02 | 264P543010 | DIODE - EG01 | |
| D5K03 | 264P543010 | DIODE - EG01 | |
| D5K10 | 264P528030 | DIODE - RP1H | |
| D5K11 | 264P528030 | DIODE - RP1H | |
| D6B01 | 262P063010 | DIODE - 1SS244 | |
| D6B02 | 264P501080 | DIODE - HZ4BLL | |
| D6B07 | 262P063010 | DIODE - 1SS244 | |
| D6B08 | 262P063010 | DIODE - 1SS244 | |
| D6G01 | 262P063010 | DIODE - 1SS244 | |
| D6G03 | 264P457080 | DIODE - RD3.3EB1 | |
| D6G07 | 262P063010 | DIODE - 1SS244 | |
| D6G08 | 262P063010 | DIODE - 1SS244 | |
| D6R01 | 262P063010 | DIODE - 1SS244 | |
| D6R05 | 264P045040 | DIODE - 1S24710M | |
| D6R06 | 264P045040 | DIODE - 1S24710M | |
| D6R07 | 262P063010 | DIODE - 1SS244 | |
| D6R08 | 262P063010 | DIODE - 1SS244 | |
| D7H01 | 264P828010 | D-CHIP - DAN202U/MA142WK | |
| D7K21 | 268P100010 | PHOTO DIODE - SFH235FA | |
| D7K22 | 264P045040 | DIODE - 1S24710M | |
| D7L20 | 264P485060 | DIODE - RD7.5FB2 | |
| D7L21 | 264P212020 | D-LED - LN31GPH | |
| D8C01 | 264P045040 | DIODE - 1S24710M | |
| D8C02 | 264P045040 | DIODE - 1S24710M | |
| D8G00 | 264P486060 | DIODE - RD9.1FB3 | |
| D8G01 | 264P486060 | DIODE - RD9.1FB3 | |
| **D9A01** | **262P031010** | **DIODE - D6SB80** | |
| **D9A20** | **264P358040** | **DIODE - RU 4A** | |
| D9A21 | 264P899010 | DIODE - BYV26E | |
| D9A22 | 264P045040 | DIODE - 1S24710M | |
| D9A23 | 264P045040 | DIODE - 1S24710M | |
| D9A24 | 264P045040 | DIODE - 1S24710M | |
| D9A25 | 264P045040 | DIODE - 1S24710M | |
| D9A26 | 264P045040 | DIODE - 1S24710M | |
| D9A27 | 264P045040 | DIODE - 1S24710M | |
| D9A28 | 264P045040 | DIODE - 1S24710M | |
| D9A29 | 264P483070 | DIODE - RD5.1FB1 | |
| D9A31 | 264P045040 | DIODE - 1S24710M | |
| D9A32 | 264P045040 | DIODE - 1S24710M | |
| **D9A33** | **264P628010** | **DIODE - FMB-G14L** | |
| D9A34 | 264P470080 | DIODE - EQA02-32C/RD33EB4 | |
| D9A35 | 264P469090 | DIODE - EQA02-28C/RD30EB2 | |
| D9A50 | 264P045040 | DIODE - 1S24710M | |
| D9A52 | 264P045040 | DIODE - 1S24710M | |
| D9A53 | 264P045040 | DIODE - 1S24710M | |
| D9A54 | 264P045040 | DIODE - 1S24710M | |
| D9A55 | 264P045040 | DIODE - 1S24710M | |
| **D9A56** | **264P566010** | **DIODE - FMP-G12S** | |
| D9A57 | 264P899010 | DIODE - BYV26E | |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| **D9A58** | **264P588010** | **DIODE - FML-G16S** | |
| D9A60 | 264P669030 | DIODE - S3L20U | |
| D9A61 | 264P669030 | DIODE - S3L20U | |
| D9A64 | 264P045040 | DIODE - 1S24710M | |
| D9A65 | 264P045040 | DIODE - 1S24710M | |
| D9A66 | 264P045040 | DIODE - 1S24710M | |
| D9B00 | 264P669030 | DIODE - S3L20U | |
| D9B01 | 264P718010 | DIODE - FR155 | |
| D9B02 | 264P669030 | DIODE - S3L20U | |
| D9B04 | 264P458050 | DIODE - RD3.9EB1 | |
| D9B05 | 264P484040 | DIODE - RD5.6FB3 | |
| D9C00 | 264D056020 | DIODE - S5500D/EM1Z/ERB12-02RK | |
| | | **COILS** | |
| L10 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L14 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L15 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L16 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L1A06 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L1A07 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L1A09 | 325C146030 | COIL-CHIP - 10MH-J | |
| L1A13 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L1A50 | 325C146030 | COIL-CHIP - 10MH-J | |
| L1A51 | 321C114010 | COIL-RF - 2200MH-J | |
| L1B06 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L1B07 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L1B09 | 325C146030 | COIL-CHIP - 10MH-J | |
| L1B13 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L1B50 | 325C146030 | COIL-CHIP - 10MH-J | |
| L1B51 | 321C114010 | COIL-RF - 2200MH-J | |
| L23 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L2A00 | 325C241030 | COIL-CHIP - 10MH-K | |
| L2A60 | 325C241030 | COIL-CHIP - 10MH-K | |
| L2B00 | 325C241030 | COIL-CHIP - 10MH-K | |
| L2C01 | 325C146050 | COIL-CHIP - 15MH-J | |
| L2C03 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2C05 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2C06 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2D01 | 325C146030 | COIL-CHIP - 10MH-J | |
| L2D03 | 325C146030 | COIL-CHIP - 10MH-J | |
| L2D08 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2D20 | 325C146030 | COIL-CHIP - 10MH-J | |
| L2E03 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2E25 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2F50 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2F60 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2F70 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2F80 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2H60 | 325C146030 | COIL-CHIP - 10MH-J | |
| L2H61 | 325C146030 | COIL-CHIP - 10MH-J | |
| L2J30 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L2J31 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L2J32 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L2J33 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L2J34 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L2J35 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L2K42 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2L42 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2M00 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2M20 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L2V06 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2V72 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2V90 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2V95 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2W01 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2W02 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2W03 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2W04 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2W05 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2X01 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2X30 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2Y00 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2Y10 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L2Y30 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L3A37 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L40 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L4A02 | 325C461030 | COIL-PEAKING - 10MH-K | |
| L4A03 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L4B01 | 321C130010 | COIL-RF - 2MH | |
| L4B02 | 321C130090 | COIL-RF - 10MH-K | |
| L5105 | 351P216010 | COIL-CH-CHIP - 857CM-0009 | |
| L5115 | 351P216010 | COIL-CH-CHIP - 857CM-0009 | |
| L5125 | 351P216010 | COIL-CH-CHIP - 857CM-0009 | |
| L51G0 | 103P359050 | R-M-CHIP - 1/8W 0OHM | |
| L51P2 | 409P865020 | EMI-F-CHIP - BLM11A601S | |
| L51P3 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L51P4 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L5230 | 325C240050 | COIL-CHIP - 2.2MH-M 322522 | |
| L5233 | 325C142050 | COIL-CHIP - 100MH-K/J | |
| L5250 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5251 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5252 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5253 | 325C140010 | COIL-CHIP - 1MH-M 322522 | |
| L5254 | 325C140010 | COIL-CHIP - 1MH-M 322522 | |
| L5290 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5291 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5292 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L52F0 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L52F1 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L52F2 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L52G0 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L52G1 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L52G2 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5300 | 325C141070 | COIL-CHIP - 22MH-K/J | |
| L5301 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L5302 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L5400 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L5401 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L5402 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L5403 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L54A0 | 103P359050 | R-M-CHIP - 1/8W 0OHM | |
| L54A1 | 409P876040 | EMI-F-CHIP - CNF20C221S/CKD510JB1H221S | |
| L54A2 | 409P876040 | EMI-F-CHIP - CNF20C221S/CKD510JB1H221S | |
| L54D0 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L54D1 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L54D2 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L54D3 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L5570 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L55A0 | 409P777080 | EMI-F-CHIP - BLM21P221S | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| L55A1 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L55A2 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L55A3 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L55A4 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L55C0 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L55E0 | 409P944010 | EMI-FILTER-CHIP - NFL21SP10 | |
| L55E1 | 409P944010 | EMI-FILTER-CHIP - NFL21SP10 | |
| L55E2 | 409P944010 | EMI-FILTER-CHIP - NFL21SP10 | |
| L55E3 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55E4 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55E5 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55E6 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55E7 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F0 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F1 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F2 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F3 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F4 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F5 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55F6 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L55G7 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L55G8 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L55H2 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L55H4 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L55H5 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L5600 | 103P359050 | R-M-CHIP - 1/8W 0OHM | |
| L5601 | 325C141030 | COIL-CHIP - 10MH-K | |
| L5602 | 325C141030 | COIL-CHIP - 10MH-K | |
| L56C0 | 325C141030 | COIL-CHIP - 10MH-K | |
| L56D0 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L56D1 | 409P945010 | EMI-FILTER-CHIP - NFL21SP50 | |
| L5900 | 409P809010 | EMI-FILTER - BNX002-01 | |
| L5901 | 325C241050 | COIL-CHIP - 15MH-K | |
| L5903 | 103P359050 | R-M-CHIP - 1/8W 0OHM | |
| L5906 | 325C241050 | COIL-CHIP - 15MH-K | |
| L59A0 | 409P809010 | EMI-FILTER - BNX002-01 | |
| L59A1 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59E0 | 411P012010 | BEAD-FERRITE | |
| L59E1 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59E2 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59E3 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59E4 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59E5 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59E6 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L59K0 | 325C241050 | COIL-CHIP - 15MH-K | |
| L59K1 | 325C141030 | COIL-CHIP - 10MH-K | |
| L59K2 | 103P359050 | R-M-CHIP - 1/8W 0OHM | |
| L59L0 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L59M0 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L59M1 | 325C141090 | COIL-CHIP - 33MH-K | |
| L59N0 | 325C141090 | COIL-CHIP - 33MH-K | |
| L59R0 | 325C141030 | COIL-CHIP - 10MH-K | |
| L59R3 | 325C141030 | COIL-CHIP - 10MH-K | |
| L59X0 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L5A31 | 411P001010 | LEAD-FERRITE | |
| **L5A33** | **333P052030** | **COIL-HORIZ-LIN** | |
| L5A34 | 321C130010 | COIL-RF - 2MH | |
| L5A51 | 321C141030 | COIL-RF - 10MH-K | |
| L5A52 | 321C141030 | COIL-RF - 10MH-K | |
| L5A53 | 321C141010 | COIL-RF - 6.8MH-M | |
| L5A54 | 411D009020 | CORE-FERRITE | |
| L5A55 | 411D009020 | CORE-FERRITE | |
| L5F00 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L5H41 | 325C110090 | COIL-PEAKING - 4.7MH-K | |
| L6B01 | 411P012010 | BEAD-FERRITE | |
| L6B02 | 411P012010 | BEAD-FERRITE | |
| L6G01 | 411P012010 | BEAD-FERRITE | |
| L6G02 | 411P012010 | BEAD-FERRITE | |
| L6R01 | 411P012010 | BEAD-FERRITE | |
| L6R02 | 411P012010 | BEAD-FERRITE | |
| L6R04 | 321C141010 | COIL-RF - 6.8MH-M | |
| L7A30 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L7A99 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L7B00 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L7B76 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L7B80 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L7C00 | 325C146030 | COIL-CHIP - 10MH-J | |
| L7C10 | 409P923060 | EMI-F-CHIP - BLM21B272S | |
| L7C20 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L7C24 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L7C25 | 409P777050 | EMI-F-CHIP - BLM21B201S | |
| L7D01 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7D11 | 325C242010 | COIL-CHIP - 47MH-K | |
| L7D12 | 409P777020 | EMI-F-CHIP - BLM21A05 | |
| L7D13 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7D14 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7D15 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7E01 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7E11 | 325C242010 | COIL-CHIP - 47MH-K | |
| L7E12 | 409P777020 | EMI-F-CHIP - BLM21A05 | |
| L7E13 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7E14 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7E15 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7G00 | 325C242050 | COIL-CHIP - 100MH-K | |
| L7G10 | 325C242050 | COIL-CHIP - 100MH-K | |
| L7G11 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7G12 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H10 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H11 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L7H12 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H13 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H14 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H15 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H16 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H17 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H19 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L7H20 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H30 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H31 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H32 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L7H38 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H40 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H41 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L7H42 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L7H50 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L7H60 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H70 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7H80 | 325C241030 | COIL-CHIP - 10MH-K | |
| L7K01 | 325C121030 | COIL-PEAKING - 10MH-K | |
| L7V01 | 409P923060 | EMI-F-CHIP - BLM21B272S | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| L80 | 325C140050 | COIL-CHIP - 2.2MH-M/K/J | |
| L8C01 | 321C141070 | COIL-RF - 22MH-K | |
| L8C02 | 321C141070 | COIL-RF - 22MH-K | |
| L8D01 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8D02 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8D03 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8D04 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8D05 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8D06 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8D07 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8G00 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| L8G01 | 409P777080 | EMI-F-CHIP - BLM21P221S | |
| **L9A02** | **351P223010** | **LINE FILTER - SLF15N0601** | |
| L9A20 | 411D009020 | CORE-FERRITE | |
| L9A21 | 411D009020 | CORE-FERRITE | |
| L9A22 | 321C141020 | COIL-RF - 8.2MH | |
| L9A23 | 321C141020 | COIL-RF - 8.2MH | |
| L9A24 | 321C141070 | COIL-RF - 22MH-K | |
| L9A50 | 411D009020 | CORE-FERRITE | |
| L9A51 | 411D009020 | CORE-FERRITE | |
| L9A52 | 411D009020 | CORE-FERRITE | |
| L9A53 | 321C141010 | COIL-RF - 6.8MH-M | |
| L9A54 | 411D009020 | CORE-FERRITE | |
| L9A55 | 321C142030 | COIL-RF - 68MH-K | |
| L9A56 | 411D009020 | CORE-FERRITE | |
| L9A57 | 321C141070 | COIL-RF - 22MH-K | |
| L9A58 | 321C141070 | COIL-RF - 22MH-K | |
| L9A59 | 321C141070 | COIL-RF - 22MH-K | |
| L9A60 | 321C141070 | COIL-RF - 22MH-K | |
| L9A62 | 321C141010 | COIL-RF - 6.8MH-M | |
| L9A63 | 321C141010 | COIL-RF - 6.8MH-M | |
| L9A64 | 321C130090 | COIL-RF - 10MH-K | |
| L9A65 | 321C141010 | COIL-RF - 6.8MH-M | |
| L9A66 | 321C141070 | COIL-RF - 22MH-K | |
| L9A67 | 321C130090 | COIL-RF - 10MH-K | |
| L9B01 | 321C140060 | COIL-RF - 2.7MH-M 9X9.5 | |
| L9B02 | 321C141070 | COIL-RF - 22MH-K | |
| L9B03 | 321C140060 | COIL-RF - 2.7MH-M 9X9.5 | |
| L9B04 | 321C140060 | COIL-RF - 2.7MH-M 9X9.5 | |
| **L9D00** | **351P222010** | **LINE FILTER - ELF24V050A** | |
| **L9D01** | **351P222010** | **LINE FILTER - ELF24V050A** | |
| LC2J01 | 409P876060 | EMI-F-CHIP - CNF20R102S/CKD510JB1H102S | |
| LC2J02 | 409P876060 | EMI-F-CHIP - CNF20R102S/CKD510JB1H102S | |
| LC2J03 | 409P876060 | EMI-F-CHIP - CNF20R102S/CKD510JB1H102S | |
| LC2J04 | 409P876060 | EMI-F-CHIP - CNF20R102S/CKD510JB1H102S | |
| LC2J05 | 409P876060 | EMI-F-CHIP - CNF20R102S/CKD510JB1H102S | |
| LC7D02 | 409P875090 | EMI-F-CHIP - ELKE103FA | |
| LC7D05 | 409P875090 | EMI-F-CHIP - ELKE103FA | |
| LC7D10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7D11 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7D12 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7D13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7D14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7E10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7E11 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7E12 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7E13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7E14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G01 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G02 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G03 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G04 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G05 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G06 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G07 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G08 | 409P875090 | EMI-F-CHIP - ELKE103FA | |
| LC7G09 | 409P875090 | EMI-F-CHIP - ELKE103FA | |
| LC7G10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G11 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G12 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7G15 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J03 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J04 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J05 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LC7J15 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S | |
| LF56A1 | 409P900010 | LP-FILTER - 7MHZ SMD | |
| LF7D00 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7D01 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7D02 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7E00 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7E01 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7E02 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7G00 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7G01 | 409P901010 | LP-FILTER - 14MHZ SMD | |
| LF7G02 | 409P901010 | LP-FILTER - 14MHZ SMD | |

## TRANSFORMERS

| | | |
|---|---|---|
| **T5A31** | **349P216010** | **TRANS-HORIZ** |
| **T5A32** | **336P040010** | **TRANS-HORIZ-DRIVE** |
| **T5A51** | **334P278010** | **TRANS-FLYBACK** |
| **T9A20** | **350P766020** | **TRANS-POWER** |
| **T9A50** | **350P800010** | **TRANS-POWER - ZTS7484** |
| T9B00 | 350P788010 | TRANS-POWER |

## VARIABLE RESISTORS

| | | |
|---|---|---|
| | 129P059050 | VR-FOCUS - MHF116-50W |
| **RV9D00** | **265P100010** | **VARISTOR - ERZV10D271/ERZVEAV271** |

## RESISTORS

**R-M-CHIP Type Resistors (Listed by Value)**

| Value | Part No. | Value | Part No. |
|---|---|---|---|
| 1/16W 0OHM | 103P509050 | 1/16W 2K-F | 103P493020 |
| 1/8W 0OHM | 103P409050 | 1/16W 2.2K-F | 103P493030 |
| 1/4W 00HM | 103P489050 | 1/16W 2.2K-J | 103P502090 |
| 1/16W 6.8-J | 103P509000 | 1/16W 2.4K-F | 103P493040 |
| 1/16W 10-J | 103P500010 | 1/16W 2.7K-J | 103P503000 |
| 1/8W 10-J | 103P400010 | 1/16W 3K-F | 103P493060 |
| 1/16W 15-J | 103P500030 | 1/16W 3.3K-F | 103P493070 |
| 1/16W 22-J | 103P500050 | 1/16W 3.3K-J | 103P503010 |
| 1/8W 22-J | 103P400050 | 1/16W 3.9K-F | 103P493090 |
| 1/16W 33-J | 103P500070 | 1/16W 3.9K-J | 103P503020 |
| 1/16W 47-J | 103P500090 | 1/16W 4.7K-F | 103P494010 |
| 1/16W 56-D | 103P844030 | 1/16W 4.7K-J | 103P503030 |
| 1/16W 56-J | 103P501000 | 1/16W 5.1K-F | 103P494020 |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|

| Value | Part No. | Value | Part No. |
|---|---|---|---|
| 1/8W 56-J | 103P401000 | 1/16W 5.6K-J | 103P503040 |
| 1/4W 75-J | 103P489090 | 1/16W 6.2K-D | 103P814040 |
| 1/16W 100-J | 103P501030 | 1/16W 6.2K-F | 103P494040 |
| 1/16W 120-J | 103P501040 | 1/16W 6.8K-F | 103P494050 |
| 1/16W 150-D | 103P810050 | 1/16W 6.8K-J | 103P503050 |
| 1/16W 150-J | 103P501050 | 1/16W 8.2K-F | 103P494070 |
| 1/16W 160-F | 103P490060 | 1/16W 8.2K-J | 103P503060 |
| 1/16W 180-J | 103P501060 | 1/16W 10K-F | 103P494090 |
| 1/16W 220-J | 103P501070 | 1/16W 10K-J | 103P503070 |
| 1/16W 240-F | 103P491000 | 1/16W 12K-J | 103P503080 |
| 1/8W 270-F | 103P471010 | 1/16W 13K-F | 103P495020 |
| 1/16W 300-F | 103P491020 | 1/16W 15K-J | 103P503090 |
| 1/16W 330-F | 103P491030 | 1/16W 16K-F | 103P495040 |
| 1/16W 330-J | 103P501090 | 1/16W 18K-J | 103P504000 |
| 1/8W 330-J | 103P401090 | 1/16W 22K-F | 103P495070 |
| 1/16W 390-F | 103P491050 | 1/16W 22K-J | 103P504010 |
| 1/16W 390-J | 103P502000 | 1/16W 24K-F | 103P495080 |
| 1/16W 470-J | 103P502010 | 1/16W 27K-F | 103P495090 |
| 1/4W 470-J | 103P482010 | 1/16W 27K-J | 103P504020 |
| 1/16W 510-F | 103P491080 | 1/16W 33K-J | 103P504030 |
| 1/16W 560-F | 103P491090 | 1/16W 39K-J | 103P504040 |
| 1/16W 560-J | 103P502020 | 1/16W 47K-F | 103P496050 |
| 1/16W 620-F | 103P492000 | 1/16W 47K-J | 103P504050 |
| 1/16W 680-F | 103P492010 | 1/8W 47K-J | 103P404050 |
| 1/16W 680-J | 103P502030 | 1/16W 56K-J | 103P504060 |
| 1/16W 820-J | 103P502040 | 1/16W 68K-J | 103P504070 |
| 1/16W 1K-F | 103P492050 | 1/16W 75K-J | 103P509090 |
| 1/16W 1K-J | 103P502050 | 1/16W 82K-J | 103P504080 |
| 1/16W 1.2K-F | 103P492070 | 1/16W 100K-F | 103P497030 |
| 1/16W 1.2K-J | 103P502060 | 1/16W 100K-J | 103P504090 |
| 1/16W 1.3K-F | 103P492080 | 1/16W 120K-J | 103P505000 |
| 1/16W 1.5K-F | 103P492090 | 1/16W 150K-J | 103P505010 |
| 1/16W 1.5K-J | 103P502070 | 1/16W 330K-J | 103P505050 |
| 1/8W 1.5K-F | 103P472090 | 1/16W 560K-J | 103P505080 |
| 1/8W 1.5K-J | 103P402070 | 1/16W 680K-J | 103P505090 |
| 1/16W 1.6K-F | 103P493000 | 1/16W 820K-J | 103P506000 |
| 1/16W 1.8K-F 1 | 103P493010 | 1/16W 1M-J | 103P506010 |
| 1/16W 1.8K-J | 103P502080 | 1/16W 3.3M-J | 103P506070 |

**Conventional Resistors (By Ref #)**

| Ref # | Part # | Description | [#] |
|---|---|---|---|
| R2M01 | 103P711080 | R-CARBON - 1/4W 270-J | |
| R2M06 | 103P711080 | R-CARBON - 1/4W 270-J | |
| R2M10 | 103P711080 | R-CARBON - 1/4W 270-J | |
| R3E02 | 103P712080 | R-CARBON - 1/4W 1.8K-J | |
| R3E04 | 103P712080 | R-CARBON - 1/4W 1.8K-J | |
| R3E05 | 103P714060 | R-CARBON - 1/4W 56K-J | |
| R3E06 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R3E15 | 103P713050 | R-CARBON - 1/4W 6.8K-J | |
| R3E16 | 103P713050 | R-CARBON - 1/4W 6.8K-J | |
| R4B02 | 103P463060 | R-METAL - 1/4W 3K-F | 2 |
| R4B05 | 103P713090 | R-CARBON - 1/4W 15K-J | |
| R4B10 | 103C188050 | R-METAL - 2W 2.7-J | |
| R4B12 | 103C188040 | R-METAL - 2W 2.2-J | |
| R4B17 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R4B20 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R4B22 | 103P712090 | R-CARBON - 1/4W 2.2K-J | 1345678 |
| R4B23 | 103P711070 | R-CARBON - 1/4W 220-J | |
| R4B24 | 103P712050 | R-CARBON - 1/4W 1K-J | |

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| R4B25 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R4B26 | 103P713000 | R-CARBON - 1/4W 2.7K-J | |
| R4B27 | 103P714080 | R-CARBON - 1/4W 82K-J | |
| R4B28 | 103P464040 | R-METAL - 1/4W 2.4K-F | |
| R5290 | 103C188040 | R-METAL - 2W 2.2-J | |
| R54E4 | 103C180020 | R-METAL - 2W 12-J | |
| R54E5 | 103C180020 | R-METAL - 2W 12-J | |
| R5A01 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R5A02 | 103P712090 | R-CARBON - 1/4W 2.2K-J | |
| R5A03 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R5A04 | 103P713090 | R-CARBON - 1/4W 15K-J | |
| R5A05 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A06 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A07 | 103P714030 | R-CARBON - 1/4W 33K-J | |
| R5A08 | 103C194010 | R-METAL - 3W 22K-J | |
| R5A09 | 103P714040 | R-CARBON - 1/4W 39K-J | |
| R5A10 | 103P714040 | R-CARBON - 1/4W 39K-J | |
| R5A11 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A12 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R5A15 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R5A16 | 103P713090 | R-CARBON - 1/4W 15K-J | |
| R5A17 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R5A18 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R5A19 | 103P461070 | R-METAL - 1/4W 470-F | |
| R5A20 | 103P714050 | R-CARBON - 1/4W 47K-J | |
| R5A21 | 103P713000 | R-CARBON - 1/4W 2.7K-J | |
| R5A22 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R5A23 | 103P713030 | R-CARBON - 1/4W 4.7K-J | |
| R5A24 | 103P714070 | R-CARBON - 1/4W 68K-J | |
| R5A25 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R5A26 | 103P712090 | R-CARBON - 1/4W 2.2K-J | |
| R5A29 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R5A30 | 103C181060 | R-METAL - 2W 180-J | |
| R5A31 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R5A33 | 103P142010 | R-CARBON - 1/2W 470-J | |
| R5A34 | 103P711010 | R-CARBON - 1/4W 68-J | |
| R5A35 | 103P143020 | R-CARBON - 1/2W 3.9K-J | |
| R5A36 | 103C393020 | R-METAL-P - 3W 3.9K-J | |
| R5A37 | 103C393010 | R-METAL-P - 3W 3.3K-J | |
| R5A38 | 103C397070 | R-METAL-P - 3W 0.56-K | |
| R5A39 | 103C170050 | R-METAL - 1W 22-J | |
| R5A40 | 103P714090 | R-CARBON - 1/4W 100K-J | |
| R5A41 | 103P714040 | R-CARBON - 1/4W 39K-J | |
| R5A42 | 103P713030 | R-CARBON - 1/4W 4.7K-J | |
| R5A43 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R5A45 | 103C393080 | R-METAL-P - 3W 12K-J | |
| R5A46 | 103C391050 | R-METAL-P - 3W 150-J | |
| R5A47 | 103P714030 | R-CARBON - 1/4W 33K-J | |
| R5A49 | 103P713050 | R-CARBON - 1/4W 6.8K-J | |
| R5A50 | 103P712090 | R-CARBON - 1/4W 2.2K-J | |
| **R5A51** | **102P107000** | **R-WIRE - 2W 0.15-K** | |
| R5A52 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R5A53 | 103P711000 | R-CARBON - 1/4W 56-J | |
| R5A54 | 103C190090 | R-METAL - 3W 47-J | |
| R5A55 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R5A56 | 103P715060 | R-CARBON - 1/4W 390K-J | |
| R5A57 | 103P711030 | R-CARBON - 1/4W 100-J | |
| **R5A59** | **103P461030** | **R-METAL - 1/4W 330-F** | |
| **R5A60** | **103P463010** | **R-METAL - 1/4W 1.8K-F** | |
| R5A61 | 103P713060 | R-CARBON - 1/4W 8.2K-J | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| R5A62 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R5A63 | 103P713090 | R-CARBON - 1/4W 15K-J | |
| R5A64 | 103P714090 | R-CARBON - 1/4W 100K-J | |
| R5A65 | 103P141030 | R-CARBON - 1/2W 100-J | |
| **R5A68** | **103P463040** | **R-METAL - 1/4W 2.4K-F** | **9** |
| **R5A68** | **103P463080** | **R-METAL - 1/4W 2.4K-F** | **12345678** |
| **R5A69** | **103P460090** | **R-METAL - 1/4W 220-F** | |
| **R5A70** | **103P463040** | **R-METAL - 1/4W 2.4K-F** | **9** |
| R5A71 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| **R5A72** | **103P461070** | **R-METAL - 1/4W 470-F** | |
| R5A73 | 103P714080 | R-CARBON - 1/4W 82K-J | |
| R5A74 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A75 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A76 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A78 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R5A81 | 103P711030 | R-CARBON - 1/4W 100-J | |
| **R5A82** | **103P370090** | **R-FUSE - 1/4W 47-J** | |
| **R5A83** | **103P464070** | **R-METAL - 1/4W 8.2K-F** | |
| **R5A84** | **103P464070** | **R-METAL - 1/4W 8.2K-F** | |
| R5A85 | 103P711010 | R-CARBON - 1/4W 68-J | |
| R5A86 | 103P142060 | R-CARBON - 1/2W 1.2K-J | |
| R5A87 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R5A88 | 103P464000 | R-METAL - 1/4W 4.3K-F | |
| R5A89 | 103P463050 | R-METAL - 1/4W 2.7K-F | |
| R5A90 | 103P713030 | R-CARBON - 1/4W 4.7K-J | |
| R5A91 | 103P714090 | R-CARBON - 1/4W 100K-J | |
| R5A92 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A96 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5A97 | 103P711030 | R-CARBON - 1/4W 100-J | |
| **R5A98** | **103C197090** | **R-METAL - 3W 0.82-J** | **12345678** |
| **R5A98** | **103C198010** | **R-METAL - 3W 1.2-J** | **9** |
| R5A99 | 103P714020 | R-CARBON - 1/4W 27K-J | |
| R5B01 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R5H02 | 103P750010 | R-FUSE - 1/4W 10-J | |
| R5H03 | 103P715000 | R-CARBON - 1/4W 120K-J | |
| R5H04 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R5H05 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R5H06 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R5H22 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R5H40 | 103P712020 | R-CARBON - 1/4W 560-J | |
| R5H41 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R5H42 | 103P711050 | R-CARBON - 1/4W 150-J | |
| R5H47 | 103C170090 | R-METAL - 1W 47-J | |
| R5H48 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R5H49 | 103P714070 | R-CARBON - 1/4W 68K-J | |
| R5H50 | 103P714070 | R-CARBON - 1/4W 68K-J | |
| R5H51 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R5H53 | 103P715000 | R-CARBON - 1/4W 120K-J | |
| R5H55 | 103P141000 | R-CARBON - 1/2W 56-J | |
| R5H56 | 103P141000 | R-CARBON - 1/2W 56-J | |
| R5H59 | 103C181030 | R-METAL - 2W 100-J | |
| R5H60 | 103C178080 | R-METAL - 1W 4.7-J | |
| R5H84 | 103P713040 | R-CARBON - 1/4W 5.6K-J | |
| R5K01 | 109D031070 | R-COMPOSITION - 1/2W 10K-K | |
| R5K02 | 103P412050 | R-CARBON - 1/4W 1K-J | |
| R5K03 | 103P145000 | R-CARBON - 1/2W 120K-J | |
| R5K04 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R5K05 | 103P145000 | R-CARBON - 1/2W 120K-J | |
| R5K06 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R5K07 | 103P145000 | R-CARBON - 1/2W 120K-J | |

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| R5K08 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R5K09 | 103P762020 | R-FUSE - 1/2W 560-J | |
| R5K10 | 103P711010 | R-CARBON - 1/4W 68-J | |
| **R5K12** | **103P760060** | **R-FUSE - 1/2W 27-J** | |
| R5K13 | 103P145000 | R-CARBON - 1/2W 120K-J | |
| R5K14 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R5K15 | 103P145000 | R-CARBON - 1/2W 120K-J | |
| R5K16 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R5K17 | 103P145000 | R-CARBON - 1/2W 120K-J | |
| R5K18 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R5K19 | 103P464000 | R-METAL - 1/4W 4.3K-F | |
| R5K20 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R5K21 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R5K22 | 103P145050 | R-CARBON - 1/2W 330K-J | |
| R5K23 | 103P145050 | R-CARBON - 1/2W 330K-J | |
| R5K24 | 103P145050 | R-CARBON - 1/2W 330K-J | |
| R5K25 | 103P713040 | R-CARBON - 1/4W 5.6K-J | |
| R5K31 | 103P711030 | R-CARBON - 1/4W 100-J | |
| **R5K34** | **103P760060** | **R-FUSE - 1/2W 27-J** | |
| R5K46 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R5K50 | 103P762050 | R-FUSE - 1/2W 1K-J | |
| R6B01 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B02 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R6B03 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R6B05 | 103P411060 | R-CARBON - 1/4W 180-J | |
| R6B06 | 103P462070 | R-METAL - 1/4W 1.2K-F | |
| R6B07 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B08 | 103P710010 | R-CARBON - 1/4W 10-J | |
| R6B09 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B10 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B11 | 103C194010 | R-METAL - 3W 22K-J | |
| R6B14 | 103P413050 | R-CARBON - 1/4W 6.8K-J | |
| R6B15 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B16 | 103P411000 | R-CARBON - 1/4W 56-J | |
| R6B17 | 101P221030 | R-COMPOSITION - 1/2W 220-K | |
| R6B18 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B20 | 101P221030 | R-COMPOSITION - 1/2W 220-K | |
| R6B21 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R6B22 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6B25 | 103P712030 | R-CARBON - 1/4W 680-J | |
| R6G01 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6G02 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R6G03 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R6G05 | 103P411010 | R-CARBON - 1/4W 68-J | |
| R6G06 | 103P462030 | R-METAL - 1/4W 820-F | |
| R6G07 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6G08 | 103P710010 | R-CARBON - 1/4W 10-J | |
| R6G09 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6G10 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6G11 | 103C194010 | R-METAL - 3W 22K-J | |
| R6G16 | 103P411000 | R-CARBON - 1/4W 56-J | |
| R6G17 | 101P221030 | R-COMPOSITION - 1/2W 220-K | |
| R6G20 | 101P221030 | R-COMPOSITION - 1/2W 220-K | |
| R6G21 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R6G22 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6R01 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6R02 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R6R03 | 103P714010 | R-CARBON - 1/4W 22K-J | |
| R6R05 | 103P411060 | R-CARBON - 1/4W 180-J | |
| R6R06 | 103P462050 | R-METAL - 1/4W 1K-F | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| R6R07 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6R08 | 103P710010 | R-CARBON - 1/4W 10-J | |
| R6R09 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6R10 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R6R11 | 103C194010 | R-METAL - 3W 22K-J | |
| R6R16 | 103P411000 | R-CARBON - 1/4W 56-J | |
| R6R17 | 101P221030 | R-COMPOSITION - 1/2W 220-K | |
| R6R20 | 101P221030 | R-COMPOSITION - 1/2W 220-K | |
| R6R22 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R7C34 | 103C178010 | R-METAL - 1W 1.2-J | |
| R7K01 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R7K02 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R7K21 | 103P711080 | R-CARBON - 1/4W 270-J | |
| R7K22 | 103P715030 | R-CARBON - 1/4W 220K-J | |
| R7K23 | 103P713080 | R-CARBON - 1/4W 12K-J | |
| R7K24 | 103P713080 | R-CARBON - 1/4W 12K-J | |
| R7K25 | 103P713080 | R-CARBON - 1/4W 12K-J | |
| R7K26 | 103P715030 | R-CARBON - 1/4W 220K-J | |
| R7K27 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R7K28 | 103P711050 | R-CARBON - 1/4W 150-J | |
| R7K29 | 103P712060 | R-CARBON - 1/4W 1.2K-J | |
| R7K30 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R7K31 | 103P715030 | R-CARBON - 1/4W 220K-J | |
| R7K32 | 103P713030 | R-CARBON - 1/4W 4.7K-J | |
| R7K34 | 103P713000 | R-CARBON - 1/4W 2.7K-J | |
| R7K35 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R7K36 | 103P710090 | R-CARBON - 1/4W 47-J | |
| R7L26 | 103P462090 | R-METAL - 1/4W 1.5K-F | |
| R7L29 | 103P464030 | R-METAL - 1/4W 5.6K-F | |
| R7L32 | 103P466070 | R-METAL - 1/4W 56K-F | |
| R8C03 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R8C07 | 103C391050 | R-METAL-P - 3W 150-J | |
| R8C11 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R8C15 | 103C391050 | R-METAL-P - 3W 150-J | |
| R8C19 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R8C23 | 103C391050 | R-METAL-P - 3W 150-J | |
| R8C27 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R8C31 | 103C391050 | R-METAL-P - 3W 150-J | |
| R8C35 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R8C39 | 103C391050 | R-METAL-P - 3W 150-J | |
| R8C43 | 103P711090 | R-CARBON - 1/4W 330-J | |
| R8C47 | 103C391050 | R-METAL-P - 3W 150-J | |
| R8C60 | 103C191090 | R-METAL - 3W 330-J | |
| R8C61 | 103C191090 | R-METAL - 3W 330-J | |
| R8C62 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R8C63 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R8C64 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R8C65 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R8C66 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R8C67 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| **R9A02** | **102P338040** | **R-CEMENT-WIRE - 15W 2.2-K** | |
| **R9A03** | **109C010010** | **R-COMPOSITION - 1/2W 1M-K** | |
| R9A04 | 103P145020 | R-CARBON - 1/2W 180K-J | |
| **R9A05** | **109C010010** | **R-COMPOSITION - 1/2W 1M-K** | |
| **R9A06** | **109C010010** | **R-COMPOSITION - 1/2W 1M-K** | |
| R9A09 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R9A10 | 103P713040 | R-CARBON - 1/4W 5.6K-J | |
| R9A11 | 103P144090 | R-CARBON - 1/2W 100K-J | |
| R9A12 | 103P713030 | R-CARBON - 1/4W 4.7K-J | |

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| R9A20 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R9A21 | 103C393090 | R-METAL-P - 3W 15K-J | |
| R9A22 | 103C183070 | R-METAL - 2W 10K-J | |
| R9A23 | 103P710070 | R-CARBON - 1/4W 33-J | |
| R9A24 | 103P713040 | R-CARBON - 1/4W 5.6K-J | |
| R9A25 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R9A26 | 103P712030 | R-CARBON - 1/4W 680-J | |
| R9A27 | 103C187050 | R-METAL - 2W 0.39-J | |
| R9A28 | 103P711070 | R-CARBON - 1/4W 220-J | |
| R9A29 | 103C187050 | R-METAL - 2W 0.39-J | |
| R9A30 | 103P712090 | R-CARBON - 1/4W 2.2K-J | |
| R9A31 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R9A32 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R9A33 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R9A34 | 103P710050 | R-CARBON - 1/4W 22-J | |
| R9A35 | 103P715010 | R-CARBON - 1/4W 150K-J | |
| R9A36 | 103P714090 | R-CARBON - 1/4W 100K-J | |
| R9A37 | 103P712090 | R-CARBON - 1/4W 2.2K-J | |
| R9A38 | 103P713030 | R-CARBON - 1/4W 4.7K-J | |
| R9A39 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R9A40 | 103P712010 | R-CARBON - 1/4W 470-J | |
| R9A41 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R9A42 | 103P712050 | R-CARBON - 1/4W 1K-J | |
| R9A44 | 103P463050 | R-METAL - 1/4W 2.7K-F | |
| R9A49 | 103P145020 | R-CARBON - 1/2W 180K-J | |
| R9A50 | 103P413070 | R-CARBON - 1/4W 10K-J | |
| R9A51 | 103P715050 | R-CARBON - 1/4W 330K-J | |
| R9A52 | 103P710090 | R-CARBON - 1/4W 47-J | |
| R9A53 | 103P712030 | R-CARBON - 1/4W 680-J | |
| R9A54 | 102P107000 | R-WIRE - 2W 0.15-K | |
| R9A55 | 102P106090 | R-WIRE - 2W 0.12-K | |
| R9A56 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R9A57 | 103P713010 | R-CARBON - 1/4W 3.3K-J | |
| R9A58 | 103P710010 | R-CARBON - 1/4W 10-J | |
| R9A59 | 103P710020 | R-CARBON - 1/4W 12-J | |
| R9A60 | 103P714050 | R-CARBON - 1/4W 47K-J | |
| R9A61 | 103P713040 | R-CARBON - 1/4W 5.6K-J | |
| R9A62 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R9A63 | 103P713020 | R-CARBON - 1/4W 3.9K-J | |
| R9A66 | 103P713070 | R-CARBON - 1/4W 10K-J | |
| R9A67 | 103P710050 | R-CARBON - 1/4W 22-J | |
| R9A68 | 103C180050 | R-METAL - 2W 22-J | |
| R9A69 | 103C180050 | R-METAL - 2W 22-J | |
| R9A71 | 103P145030 | R-CARBON - 1/2W 220K-J | |
| R9A73 | 103P412050 | R-CARBON - 1/4W 1K-J | |
| R9A74 | 103P144020 | R-CARBON - 1/2W 27K-J | |
| R9A75 | 103P714090 | R-CARBON - 1/4W 100K-J | |
| R9A77 | 103P714090 | R-CARBON - 1/4W 100K-J | |
| R9A78 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R9A79 | 103P711030 | R-CARBON - 1/4W 100-J | |
| R9A84 | 103P715050 | R-CARBON - 1/4W 330K-J | |
| R9A85 | 103P714080 | R-CARBON - 1/4W 82K-J | |
| R9B12 | 103P140010 | R-CARBON - 1/2W 10-J | |
| R9B13 | 103P140010 | R-CARBON - 1/2W 10-J | |
| R9C00 | 103C188080 | R-METAL - 2W 4.7J | |
| R9C01 | 103C398020 | R-METAL-P - 3W 1.5-K | |
| R9C20 | 103C398020 | R-METAL-P - 3W 1.5-K | |
| R9C21 | 103C398050 | R-METAL-P - 3W 2.7-K | |
| **R9D00** | **109D036020** | **R-COMPOSITION - 1/2W 4.7M-K** | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

## CAPACITORS AND TRIMMERS

**C-CER-CHIP Capactiors (By Value)**

| Value | Part # | Value | Part # |
|---|---|---|---|
| 16V 0.068M-J? | 172P392030 | 50V 1000P | 141P143050 |
| 16V 10M-M | 181P502030 | B50V 1000P-K | 141P140090 |
| 16V 22M-M | 181P502040 | B50V 1500P-K | 141P141010 |
| 50V 1000P-J | 172P390010 | B50V 2200P-K | 141P141030 |
| 50V 1M-M 105C | 181P526010 | CH50V 2700P-J | 154P337040 |
| 6.3V 22M-M | 181P500010 | B50V 3300P-K | 141P141050 |
| 6.3V 47M-M | 181P500030 | B50V 4700P-K | 141P141070 |
| SL50V 2P-C | 154P350040 | SL50V 5600P-J | 154P329030 |
| CJ50V 3P-C | 154P340040 | B50V 6800P-K | 141P141090 |
| CH50V 10P-C | 154P341010 | B50V 8200P-K | 141P142000 |
| CH50V 15P-J | 154P341050 | 16V 0.01M-J | 172P391030 |
| SL50V 15P-J | 154P351060 | B50V 0.01M-K | 141P142010 |
| CH50V 22P-J | 154P341090 | F50V 0.01M-Z | 141P143080 |
| SL50V 27P-J | 154P352020 | B50V 0.012M-K | 141P142020 |
| CH50V 33P-J | 154P342030 | B50V 0.015M-K | 141P142030 |
| SL50V 33P-J | 154P352040 | B25V 0.033M-K | 141P142070 |
| CH50V 39P-J | 154P342050 | B25V 0.047M-K | 141P142090 |
| CH50V 47P-J | 154P342070 | F50V 0.047M-Z | 141P144010 |
| SL50V 47P-J | 154P352080 | B25V 0.068M-K | 141P143010 |
| SL50V 56P-J | 154P353000 | 16V 0.1M-J | 172P392050 |
| CH50V 82P-J | 154P343030 | B16V 0.1M-K | 141P143030 |
| CH50V 100P-J | 154P343050 | F25V 0.1M-Z | 141P144020 |
| SL50V 100P-J | 154P353060 | F50V 0.1M-Z | 141P135080 |
| 50V 120P-J | 154P343070 | F50V 0.1M-Z | 141P134090 |
| CH50V 150P-J | 154P343090 | B25V 0.15M-K | 141P139050 |
| SL50V 150P-J | 154P354000 | B16V 0.22M-K | 141P139070 |
| B50V 220P-K | 141P140010 | B16V 0.47M-K | 141P139090 |
| CH50V 220P-J | 154P344030 | F16V 0.47M-Z | 141P144050 |
| CH50V 270P-J | 154P344050 | B16V 1M-K | 141P134070 |
| CH50V 330P-J | 154P344070 | F16V 1M-Z | 141P144060 |
| B50V 390P-K | 141P140040 | F16V 1M-Z | 141P135070 |
| B50V 470P-K | 141P140050 | F16V 1M-Z | 141P144060 |
| CH50V 470P-J | 154P345010 | 50V 2.2M-M 105C | 181P526020 |
| SL50V 470P-J | 154P325020 | 6.3V 22M-M 105C | 181P520010 |
| CH25V 560P-J | 154P345030 | 6.3V 47M-M 105C | 181P520030 |
| B50V 560P-K | 141P140060 | 16V 47M-M 105C | 181P522060 |
| CH25V 680P-J | 154P345050 | 6.3V 100M-M 105C | 181P520040 |
| CH25V 1000P-J | 154P345090 | | |

**Conventional Capacitors (By Ref #)**

| Ref # | Part # | Description | [#] |
|---|---|---|---|
| Ref # | Part # | Part Name & Description | [#] |
| C12 | 181P508000 | C-ELEC - 4V 100M-M | |
| C1A10 | 181P355090 | C-ELEC - 50V 100M-M | |
| C1A29 | 181P352040 | C-ELEC - 16V 100M-M | |
| C1A30 | 181P352040 | C-ELEC - 16V 100M-M | |
| C1A31 | 181P352040 | C-ELEC - 16V 100M-M | |
| C1A50 | 172P262010 | C-M-POLY - 50V 0.047M-J | |
| C1B10 | 181P355090 | C-ELEC - 50V 100M-M | |
| C1B29 | 181P352040 | C-ELEC - 16V 100M-M | |
| C1B30 | 181P352040 | C-ELEC - 16V 100M-M | |
| C1B31 | 181P352040 | C-ELEC - 16V 100M-M | |
| C1B50 | 172P262010 | C-M-POLY - 50V 0.047M-J | |
| C2A00 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2A50 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2A51 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2A60 | 181P212060 | C-ELEC - 16V 47M-M | |
| C2A62 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2A63 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2A64 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2A65 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2A66 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2A67 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2B00 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2B50 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2B51 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2D04 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2D08 | 181P355080 | C-ELEC - 50V 47M-M | |
| C2D17 | 181P352010 | C-ELEC - 16V 22M-M | |
| C2D19 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2E02 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C2E03 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2E24 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2E33 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C2F30 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2F40 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2F54 | 181P210040 | C-ELEC - 6.3V 100M-M | |
| C2F64 | 181P210040 | C-ELEC - 6.3V 100M-M | |
| C2F70 | 181P212060 | C-ELEC - 16V 47M-M | |
| C2F80 | 181P212060 | C-ELEC - 16V 47M-M | |
| C2H33 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C2H60 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2H63 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2K01 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K03 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K08 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K10 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K15 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K17 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K24 | 181P124040 | C-ELEC-NP - 50V 10M-M | |
| C2K30 | 181P124040 | C-ELEC-NP - 50V 10M-M | |
| C2K50 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K52 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K54 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K60 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K63 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2K65 | 181P212070 | C-ELEC - 16V 100M-M | |
| C2L01 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L03 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L08 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L10 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L15 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L17 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L22 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L24 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L30 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L49 | 181P122070 | C-ELEC-NP - 25V 10M-M | |
| C2L50 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L60 | 181P216050 | C-ELEC - 50V 10M-M | |
| C2L65 | 181P212070 | C-ELEC - 16V 100M-M | |
| C2M00 | 181P351070 | C-ELEC - 10V 470M-M | |
| C2M02 | 181P351070 | C-ELEC - 10V 470M-M | |
| C2M03 | 181P212070 | C-ELEC - 16V 100M-M | |
| C2M20 | 181P352080 | C-ELEC - 16V 1000M-M | |
| C2M22 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2M23 | 181P352030 | C-ELEC - 16V 47M-M | |

**[#] Model Legend:**

**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| C2V07 | 181P352050 | C-ELEC - 16V 220M-M | |
| C2V43 | 181P355060 | C-ELEC - 50V 22M-M | |
| C2V54 | 181P355050 | C-ELEC - 50V 10M-M | |
| C2V72 | 181P352050 | C-ELEC - 16V 220M-M | |
| C2W04 | 181P352050 | C-ELEC - 16V 220M-M | |
| C2W05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2W09 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2W14 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2X01 | 181P352040 | C-ELEC - 16V 100M-M | |
| C2X03 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2Y01 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2Y11 | 181P352030 | C-ELEC - 16V 47M-M | |
| C2Y30 | 181P352030 | C-ELEC - 16V 47M-M | |
| C3A10 | 181P355020 | C-ELEC - 50V 2.2M-M | |
| C3A11 | 181P352040 | C-ELEC - 16V 100M-M | |
| C3A15 | 181P124020 | C-ELEC-NP - 50V 4.7M-M NP | |
| C3A16 | 181P355050 | C-ELEC - 50V 10M-M | |
| C3A17 | 181P355050 | C-ELEC - 50V 10M-M | |
| C3A22 | 181P355050 | C-ELEC - 50V 10M-M | |
| C3A24 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C3A27 | 181P352060 | C-ELEC - 16V 330M-M | |
| C3A29 | 181P355050 | C-ELEC - 50V 10M-M | |
| C3A30 | 181P352040 | C-ELEC - 16V 100M-M | |
| C3A34 | 181P355050 | C-ELEC - 50V 10M-M | |
| C3A35 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C3A36 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C3A37 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C3A38 | 181P124020 | C-ELEC-NP - 50V 4.7M-M NP | |
| C3E01 | 181P354050 | C-ELEC - 35V 47M-M | |
| C3E02 | 181P355010 | C-ELEC - 50V 1M-M | |
| C3E04 | 181P355010 | C-ELEC - 50V 1M-M | |
| C3E06 | 181P355050 | C-ELEC - 50V 10M-M | |
| C3E07 | 181P353090 | C-ELEC - 25V 2200M-M | |
| C3E09 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C3E11 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C3E12 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C3E14 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C4A00 | 181P355050 | C-ELEC - 50V 10M-M | |
| C4A04 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C4A05 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C4A10 | 181P352030 | C-ELEC - 16V 47M-M | |
| C4A14 | 181P352030 | C-ELEC - 16V 47M-M | |
| C4A34 | 181P352030 | C-ELEC - 16V 47M-M | |
| C4A35 | 172P262090 | C-M-POLY - 50V 0.22M-J | |
| C4B01 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C4B02 | 181P358000 | C-ELEC - 35V 1000M-M | |
| C4B03 | 172P383030 | C-M-POLY - 100V 0.47M-K | |
| C4B04 | 181P354060 | C-ELEC - 35V 100M-M | |
| C4B06 | 181P353020 | C-ELEC - 25V 10M-M | |
| C4B09 | 181P355060 | C-ELEC - 50V 22M-M | |
| C4B10 | 181P355070 | C-ELEC - 50V 33M-M | |
| C4B11 | 181P353090 | C-ELEC - 25V 2200M-M | |
| C4B13 | 172P262020 | C-M-POLY - 50V 0.056M-J | |
| C5102 | 181P355010 | C-ELEC - 50V 1M-M | |
| C5112 | 181P355010 | C-ELEC - 50V 1M-M | |
| C5122 | 181P355010 | C-ELEC - 50V 1M-M | |
| C51K7 | 181P351050 | C-ELEC - 10V 220M-M | |
| C51P1 | 181P350050 | C-ELEC - 6.3V 470M-M | |
| C5221 | 181P353060 | C-ELEC - 25V 330M-M SO | |
| C5234 | 181P355090 | C-ELEC - 50V 100M-M | |
| C5235 | 181P355090 | C-ELEC - 50V 100M-M | |
| C5251 | 181P351070 | C-ELEC - 10V 470M-M | |
| C5253 | 181P351060 | C-ELEC - 10V 330M-M | |
| C5255 | 181P351060 | C-ELEC - 10V 330M-M | |
| C5257 | 181P350060 | C-ELEC - 6.3V 1000M-M | |
| C5258 | 181P350050 | C-ELEC - 6.3V 470M-M | |
| C5291 | 181P353060 | C-ELEC - 25V 330M-M SO | |
| C5292 | 181P353060 | C-ELEC - 25V 330M-M SO | |
| C5295 | 181P353060 | C-ELEC - 25V 330M-M SO | |
| C5297 | 181P353060 | C-ELEC - 25V 330M-M SO | |
| C52F4 | 181P352040 | C-ELEC - 16V 100M-M | |
| C52G5 | 181P352040 | C-ELEC - 16V 100M-M | |
| C52G6 | 181P355010 | C-ELEC - 50V 1M-M | |
| C5305 | 181P350040 | C-ELEC - 6.3V 330M-M | |
| C54K2 | 189P197020 | C-ELE-DOUBLE-LA - FM0H473Z/EECS5R5T473Z | |
| C55C2 | 181P351040 | C-ELEC - 10V 100M-M | |
| C55C3 | 181P351040 | C-ELEC - 10V 100M-M | |
| C55C4 | 181P351040 | C-ELEC - 10V 100M-M | |
| C5612 | 181P122070 | C-ELEC-NP - 25V 10M-M | |
| C5617 | 181P122070 | C-ELEC-NP - 25V 10M-M | |
| C56A1 | 172P264010 | C-M-POLY - 50V 2.2M-J | |
| C56A2 | 172P264010 | C-M-POLY - 50V 2.2M-J | |
| C56A9 | 181P355020 | C-ELEC - 50V 2.2M-M | |
| C5902 | 181P350050 | C-ELEC - 6.3V 470M-M | |
| C59A6 | 181P351070 | C-ELEC - 10V 470M-M | |
| C59E0 | 181P350060 | C-ELEC - 6.3V 1000M-M | |
| C59E2 | 181P350050 | C-ELEC - 6.3V 470M-M | |
| C59M0 | 181P351070 | C-ELEC - 10V 470M-M | |
| C59X0 | 181P353060 | C-ELEC - 25V 330M-M SO | |
| C59X2 | 181P352020 | C-ELEC - 16V 33M-M | |
| C59X3 | 181P352020 | C-ELEC - 16V 33M-M | |
| C59X4 | 181P352020 | C-ELEC - 16V 33M-M | |
| C59X5 | 181P352020 | C-ELEC - 16V 33M-M | |
| C59X6 | 181P352020 | C-ELEC - 16V 33M-M | |
| C5A03 | 142P020050 | C-CER - B50V 470P-K | |
| C5A04 | 172P261030 | C-M-POLY - 50V 0.01M-J | |
| C5A10 | 181P191000 | C-ELEC - 160V 22M-M/Q | |
| C5A11 | 181P354060 | C-ELEC - 35V 100M-M | |
| C5A13 | 181P352040 | C-ELEC - 16V 100M-M | |
| C5A14 | 181P354060 | C-ELEC - 35V 100M-M | |
| C5A15 | 181P354060 | C-ELEC - 35V 100M-M | |
| C5A21 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C5A22 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C5A23 | 181P355050 | C-ELEC - 50V 10M-M | |
| C5A31 | 172P580050 | C-M-PLA-PP - 1800V 1500P-J | |
| C5A32 | 172P581030 | C-M-PLA-PP - 1800V 3300P-J | |
| C5A33 | 172P581030 | C-M-PLA-PP - 1800V 3300P-J | |
| C5A34 | 154P262000 | C-CER - R2KV 220P-K | |
| C5A35 | 142P011070 | C-CER - B500V 2200P-K | |
| C5A36 | 172P524010 | C-M-POLY - 250V 2.2M-J | |
| C5A39 | 142P011000 | C-CER - B500V 560P-K | |
| C5A40 | 142P011000 | C-CER - B500V 560P-K | |
| C5A41 | 181P353080 | C-ELEC - 25V 1000M-M | |
| C5A42 | 181P352030 | C-ELEC - 16V 47M-M | |
| C5A43 | 181P190050 | C-ELEC - 160V 1M-M/Q | |
| **C5A51** | **154P260010** | **C-CER - R1KV 220P-K** | |
| **C5A52** | **172P460010** | **C-M-PLA-PP - 2000V 1000P-J** | |
| **C5A53** | **172P460030** | **C-M-PLA-PP - 2000V 1200P-J** | |
| C5A54 | 185D120010 | C-ELEC - H160V 330M-M 105C | |
| C5A55 | 172P088060 | C-PLAST-PP - 630V 6800P-J | |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| C5A56 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C5A60 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C5A61 | 181P355040 | C-ELEC - 50V 4.7M-M | |
| C5A64 | 181P352010 | C-ELEC - 16V 22M-M | |
| C5A65 | 181P355050 | C-ELEC - 50V 10M-M | |
| C5A69 | 181P355050 | C-ELEC - 50V 10M-M | |
| C5A70 | 172P384030 | C-M-POLY - 100V 3.3M-K | |
| C5A71 | 172P262060 | C-M-POLY - 50V 0.12M-J | |
| C5F02 | 181P355090 | C-ELEC - 50V 100M-M | |
| C5H01 | 181P352060 | C-ELEC - 16V 330M-M | |
| C5H04 | 155P232070 | C-CER - CH50V 47P-J | |
| C5H16 | 172P186030 | C-PLAST-PP - 200V 0.01M-K | |
| C5H17 | 172P261030 | C-M-POLY - 50V 0.01M-J | |
| C5H19 | 181P183010 | C-ELEC - 25V 100M-M 105C | |
| C5H20 | 181P352040 | C-ELEC - 16V 100M-M | |
| C5H21 | 181P780080 | C-ELEC - 160V 33M-M 105C | |
| C5H24 | 181P192060 | C-ELEC - 200V 22M-M/Q | |
| C5K02 | 181P198040 | C-ELEC - 450V 4.7M-M/Q | |
| C5K03 | 181P352040 | C-ELEC - 16V 100M-M | |
| C5K04 | 181P355080 | C-ELEC - 50V 47M-M | |
| C5K05 | 181P354060 | C-ELEC - 35V 100M-M | |
| C5K12 | 181P352040 | C-ELEC - 16V 100M-M | |
| C5K14 | 181P352030 | C-ELEC - 16V 47M-M | |
| C5K15 | 181P191000 | C-ELEC - 160V 22M-M/Q | |
| C6B01 | 155P231050 | C-CER - CH50V 15P-J | |
| C6B02 | 181P195050 | C-ELEC - 350V 10M-M | |
| C6B03 | 155P231090 | C-CER - CH50V 22P-J | |
| C6B05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C6B12 | 154P405000 | C-CER - B3KV 1000P-K | |
| C6B13 | 142P012010 | C-CER - B500V 4700P-K | |
| C6B14 | 154P405000 | C-CER - B3KV 1000P-K | |
| C6B16 | 154P260050 | C-CER - R1KV 1000P-K | |
| C6G01 | 155P231050 | C-CER - CH50V 15P-J | |
| C6G02 | 181P195050 | C-ELEC - 350V 10M-M | |
| C6G03 | 155P232030 | C-CER - CH50V 33P-J | |
| C6G05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C6G08 | 155P232050 | C-CER - CH50V 39P-J | |
| C6G12 | 154P405000 | C-CER - B3KV 1000P-K | |
| C6G13 | 142P012010 | C-CER - B500V 4700P-K | |
| C6G14 | 154P405000 | C-CER - B3KV 1000P-K | |
| C6G16 | 154P260050 | C-CER - R1KV 1000P-K | |
| C6R01 | 155P231050 | C-CER - CH50V 15P-J | |
| C6R02 | 181P195050 | C-ELEC - 350V 10M-M | |
| C6R03 | 155P232010 | C-CER - CH50V 27P-J | |
| C6R05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C6R12 | 154P405000 | C-CER - B3KV 1000P-K | |
| C6R13 | 142P012010 | C-CER - B500V 4700P-K | |
| C6R14 | 154P405000 | C-CER - B3KV 1000P-K | |
| C7A31 | 181P352030 | C-ELEC - 16V 47M-M | |
| C7A99 | 181P352030 | C-ELEC - 16V 47M-M | |
| C7B76 | 181P352030 | C-ELEC - 16V 47M-M | |
| C7C00 | 181P352040 | C-ELEC - 16V 100M-M | |
| C7C31 | 181P352050 | C-ELEC - 16V 220M-M | |
| C7K01 | 181P352030 | C-ELEC - 16V 47M-M | |
| C7K21 | 181P355050 | C-ELEC - 50V 10M-M | |
| C7K23 | 181P352030 | C-ELEC - 16V 47M-M | |
| C7K25 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C7K26 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C7K27 | 181P355010 | C-ELEC - 50V 1M-M | |
| C7K28 | 181P355050 | C-ELEC - 50V 10M-M | |
| C7L22 | 172P262050 | C-M-POLY - 50V 0.1M-J | |
| C8C03 | 181P184010 | C-ELEC - 50V 1000M-M 105C | |
| C8C05 | 181P184010 | C-ELEC - 50V 1000M-M 105C | |
| C8C43 | 142P020080 | C-CER - B50V 820P-K | |
| C8C44 | 142P020080 | C-CER - B50V 820P-K | |
| C8C45 | 142P020080 | C-CER - B50V 820P-K | |
| C8C46 | 142P020080 | C-CER - B50V 820P-K | |
| C8C47 | 142P020080 | C-CER - B50V 820P-K | |
| C8C48 | 142P020080 | C-CER - B50V 820P-K | |
| C8C49 | 155P231050 | C-CER - CH50V 15P-J | |
| C8C50 | 155P231050 | C-CER - CH50V 15P-J | |
| C8D16 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D19 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D20 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D21 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D22 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D29 | 181P355010 | C-ELEC - 50V 1M-M | |
| C8D30 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D31 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D33 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D35 | 172P262040 | C-M-POLY - 50V 0.082M-J | |
| C8D36 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D39 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8D40 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E01 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E03 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E07 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E09 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E12 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E14 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8E16 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8G00 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8G01 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8G03 | 181P352020 | C-ELEC - 16V 33M-M | |
| C8G05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8G06 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8G09 | 181P352030 | C-ELEC - 16V 47M-M | |
| C8G55 | 181P352030 | C-ELEC - 16V 47M-M | |
| **C9A05** | **189P185070** | **C-CER - 250VAC 1000P-M** | |
| **C9A06** | **189P185070** | **C-CER - 250VAC 1000P-M** | |
| **C9A07** | **189P153040** | **C-M-POLY - 250VAC 0.1M-M** | |
| **C9A08** | **189P185090** | **C-CER - 250VAC 2200P-M** | |
| **C9A09** | **189P185090** | **C-CER - 250VAC 2200P-M** | |
| **C9A10** | **189P185090** | **C-CER - 250VAC 2200P-M** | |
| **C9A11** | **189P185090** | **C-CER - 250VAC 2200P-M** | |
| C9A12 | 185D122050 | C-ELEC - H200V 1000M-M 105C | |
| **C9A13** | **189P152070** | **C-M-POLY - 250VAC 0.01M-M** | |
| **C9A14** | **189P152070** | **C-M-POLY - 250VAC 0.01M-M** | |
| C9A15 | 189P185090 | C-CER - 250VAC 2200P-M | |
| C9A20 | 189P152070 | C-M-POLY - 250VAC 0.01M-M | |
| C9A22 | 154P260050 | C-CER - R1KV 1000P-K | |
| C9A23 | 181P354050 | C-ELEC - 35V 47M-M | |
| C9A24 | 142P020050 | C-CER - B50V 470P-K | |
| C9A25 | 155P239000 | C-CER - CH50V 180P-J | |
| C9A27 | 181P355050 | C-ELEC - 50V 10M-M | |
| C9A28 | 181P355050 | C-ELEC - 50V 10M-M | |
| C9A29 | 142P010090 | C-CER - B500V 470P-K | |
| C9A30 | 181P743090 | C-ELEC - 04W 16V | |
| C9A31 | 181P743090 | C-ELEC - 04W 16V | |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| C9A33 | 181P743070 | C-ELEC - 04W 16V | |
| C9A35 | 181P352040 | C-ELEC - 16V 100M-M | |
| C9A36 | 142P010090 | C-CER - B500V 470P-K | |
| C9A39 | 181P355010 | C-ELEC - 50V 1M-M | |
| C9A40 | 181P352040 | C-ELEC - 16V 100M-M | |
| C9A42 | 181P352040 | C-ELEC - 16V 100M-M | |
| C9A43 | 172P261030 | C-M-POLY - 50V 0.01M-J | |
| C9A50 | 142P020050 | C-CER - B50V 470P-K | |
| C9A51 | 181P355090 | C-ELEC - 50V 100M-M | |
| C9A52 | 154P400070 | C-CER - B1KV 2200P-K RA | |
| C9A53 | 185D122050 | C-ELEC - H200V 1000M-M 105C | |
| C9A54 | 154P260080 | C-CER - R1KV 3300P-K | |
| C9A55 | 172P339080 | C-POLY - 50V 680P-J | |
| C9A56 | 181P186000 | C-ELEC - 50V 100M-M 105C | |
| C9A57 | 142P010090 | C-CER - B500V 470P-K | |
| C9A58 | 185D163020 | C-ELEC - H50V 4700M-M 105C | |
| C9A59 | 185D122050 | C-ELEC - H200V 1000M-M 105C | |
| C9A60 | 154P400030 | C-CER - B1KV 470P-K | |
| C9A61 | 142P010090 | C-CER - B500V 470P-K | |
| C9A62 | 189D183010 | C-ELEC - 400AXW100M | |
| C9A63 | 185D121020 | C-ELEC - H180V 470M-M 105C | |
| C9A64 | 181P190090 | C-ELEC - 160V 10M-M/Q | |
| C9A65 | 181P194000 | C-ELEC - 250V 10M-M/Q | |
| C9A66 | 142P012050 | C-CER - B500V 0.01M-K | |
| C9A67 | 142P012050 | C-CER - B500V 0.01M-K | |
| C9A68 | 142P010090 | C-CER - B500V 470P-K | |
| C9A69 | 181P358030 | C-ELEC - 35V 4700M-M | |
| C9A73 | 181P358030 | C-ELEC - 35V 4700M-M | |
| C9A74 | 142P010090 | C-CER - B500V 470P-K | |
| C9B01 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9B02 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9B03 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9B13 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9B14 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9B17 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9B18 | 181P182030 | C-ELEC - 16V 1000M-M 105C | |
| C9C00 | 181P350010 | C-ELEC - 16V 4700M-M | |
| C9C02 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C05 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C10 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C12 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C20 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C23 | 181P355050 | C-ELEC - 50V 10M-M | |
| C9C24 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C26 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C40 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C42 | 181P352030 | C-ELEC - 16V 47M-M | |
| C9C52 | 181P352030 | C-ELEC - 16V 47M-M | |
| **C9D00** | **189P153040** | **C-M-POLY - 250VAC 0.1M-M** | |
| **C9D01** | **189P153040** | **C-M-POLY - 250VAC 0.1M-M** | |
| CF2E00 | 299P128010 | CERAMIC-OSC - CSB500F2 | |
| CF2H01 | 299P128010 | CERAMIC-OSC - CSB500F2 | |
| CF3A01 | 299P208010 | CERAMIC-OSC - C5B503F58 | |

## SWITCHES

| | | | |
|---|---|---|---|
| S5400 | 432C082010 | SW-PUSH - SPPJ322300 | |
| S7L20 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L21 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L22 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L23 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L24 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L25 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L26 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L27 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L28 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| S7L29 | 432P089010 | SW-KEY-BOARD - PUSH SWITCH | |
| SF2 | 296P165010 | SAW-FILTER - SAF44MTC80ZL | |
| SF5201 | 296P167010 | SAW-FILTER - SAF44.00MTG220ZL | |

## MISCELLANEOUS

| | | | |
|---|---|---|---|
| | 246C351010 | AC-POWER-CORD | 8 |
| | 246C351030 | AC-POWER-CORD | 12345679 |
| | 305P702020 | RF-SW - YAA41-0126G | |
| | 598D417010 | PLATE-RF SWITCH - COLD ROLL | |
| | **330P276050** | **DEFL-YOKE** | |
| | 338P054010 | SVM-ASSY | 1235 |
| | 338P054020 | SVM-ASSY | 46789 |
| | 411D023010 | CORE-FERRITE | |
| | 411D024020 | CORE-FERRITE - ZCAT2132-1130 | |
| | 411D033010 | CORE-FERRITE | |
| | 411D044010 | CORE-FERRITE | |
| | **449C141030** | **SOCKET-CRT** | |
| | **453B035010** | **CAP-ANODE - SHORT - RED** | **12345678** |
| | **453B035020** | **CAP-ANODE - LONG - G&B** | **12345678** |
| | **453B035030** | **CAP-ANODE - SHORT - RED** | **9** |
| | **453B035040** | **CAP-ANODE - LONG - G&B** | **9** |
| | **453C021030** | **LEAD-ANODE - FBT-HV** | |
| | 480P053010 | SPEAKER - 5 INCH | 2 |
| | 480P057010 | SPEAKER - 6.5 INCH | 479 |
| | 480P058010 | SPEAKER - 3 INCH | 4789 |
| | 480P063010 | SPEAKER - 6 INCH | 135 |
| | 480P066010 | SPEAKER - 6 INCH | 6 |
| | 480P069010 | SPEAKER - 7 INCH | 8 |
| | 490P154010 | LENS - RED | 12345678 |
| | 490P154020 | LENS - BLUE/GREEN | 12345678 |
| | 490P195010 | LENS - ALL COLORS | 9 |
| | 597D843010 | STIFFENER-MIRROR - 3/4"X3/4" TUBING | 5-7 |
| | 598D339010 | BRACKET,SCREEN SIDE - METAL | 2 |
| | 622B009020 | TRAY CRT | 12345678 |
| | 622C067010 | CRT-TRAY | 9 |
| | 622C086010 | MIRROR-CLIP - PLASTIC | 2 |
| | 635B109010 | STIFFENER-TOP - METAL | 2 |
| | 642C340010 | BOARD-MIRROR | 5-7 |
| | 642C352010 | CLIP-MIRROR | 134 |
| | 767C031010 | MIRROR - 73" | 9 |
| | 767D048090 | MIRROR - 65" | 5-8 |
| | 767D055040 | MIRROR - 55" | 4 |
| | 767D072030 | MIRROR - 55" | 1&3 |
| | 767D072040 | MIRROR - 48" | 2 |
| | **920P016010** | **HV-BLOCK - MSC102** | |
| AG5K00 | 224D019040 | AIR-GAP - 2.0+-0.5KV S.LEAD | |
| AG6B01 | 224D019090 | AIR-GAP - 1.5+-0.5KV S.LEAD | |
| AG6G01 | 224D019090 | AIR-GAP - 1.5+-0.5KV S.LEAD | |
| AG6R01 | 224D019090 | AIR-GAP - 1.5+-0.5KV S.LEAD | |
| BF56A1 | 409P381020 | BP-FILTER - H354BAI | |
| **F5A00** | **283P043060** | **FUSE - LF251 3A** | |
| **F5A01** | **283P043060** | **FUSE - LF251 3A** | |
| **F9A01** | **283P044020** | **FUSE - LF251 10A** | |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| **F9A02** | **283P044020** | **FUSE - LF251 10A** | |
| **F9A03** | **283P043090** | **FUSE - LF251 5A** | |
| **F9A04** | **283P043090** | **FUSE - LF251 5A** | |
| **F9A05** | **283P043090** | **FUSE - LF251 5A** | |
| **F9A06** | **283P043090** | **FUSE - LF251 5A** | |
| **F9B00** | **283P128020** | **FUSE-CHIP - AC125V/100V 2A** | |
| **F9B01** | **283P128050** | **FUSE-CHIP - AC125V/100V 4A** | |
| **F9D00** | **283D131040** | **FUSE - S10A 125A** | |
| J5100 | 451P246010 | JACK-1394 - MINI JACK | |
| J5110 | 451P246010 | JACK-1394 - MINI JACK | |
| J5120 | 451P246010 | JACK-1394 - MINI JACK | |
| J54K1 | 451C129010 | JACK-MINI - AV NET/IR BLAST | |
| J54K2 | 451C129010 | JACK-MINI - AV NET/IR BLAST | |
| J5601 | 440C393030 | PIN-JACK-BOARD-1P | |
| **K9A50** | **287P049080** | **RELAY-POWER - DG12D1-0(M)** | |
| **PC9A20** | **268P058020** | **PHOTO-COUPLER - ON3131-R/ON3161-R** | |
| **PC9A21** | **268P058020** | **PHOTO-COUPLER - ON3131-R/ON3161-R** | |
| **PC9A50** | **268P058020** | **PHOTO-COUPLER - ON3131-R/ON3161-R** | |
| **PC9A51** | **268P058020** | **PHOTO-COUPLER - ON3131-R/ON3161-R** | |
| PJ205 | 440C414020 | PIN-JACK-BOARD-2P | 4789 |
| PJ2J00 | 440C386010 | PIN-JACK-BOARD-6P | 12356 |
| PJ2J00 | 440C386030 | PIN-JACK-BOARD-6P | 4789 |
| PJ2J01 | 440C386010 | PIN-JACK-BOARD-6P | 12356 |
| PJ2J01 | 440C386030 | PIN-JACK-BOARD-6P | 4789 |
| PJ2J02 | 440C402010 | PIN-JACK-BOARD-5P | 12356 |
| PJ2J02 | 440C402020 | PIN-JACK-BOARD-5P | 4789 |
| PJ2J03 | 440C385010 | PIN-JACK-BOARD-6P | 12356 |
| PJ2J03 | 440C385030 | PIN-JACK-BOARD-6P | 4789 |
| PJ2J04 | 440C261070 | PIN-JACK-BOARD-2P | 12356 |
| PJ2J04 | 440C383040 | PIN-JACK-BOARD-2P | 4789 |
| PJ2J05 | 440C414010 | PIN-JACK-BOARD-2P | 12356 |
| PJ2J06 | 452C315010 | VGA CONNECTOR | |
| PJ2J07 | 440C261070 | PIN-JACK-BOARD-2P | 12356 |
| PJ2J07 | 440C383040 | PIN-JACK-BOARD-2P | 4789 |
| PJ2J08 | 440C385020 | PIN-JACK-BOARD-6P | 12356 |
| PJ2J08 | 440C385040 | PIN-JACK-B0ARD-6P | 4789 |
| PJ2J09 | 440C414010 | PIN-JACK-BOARD-2P | 12356 |
| PJ2J09 | 440C414020 | PIN-JACK-BOARD-2P | 4789 |
| PJ2J11 | 440C231010 | JACK-3PIN - FRONT A/V INPUT | 12356 |
| PJ2J11 | 440C384010 | PIN-JACK-BOARD-3P | 4789 |
| PJ7C01 | 451C129010 | JACK-MINI - AV NET/IR BLAST | |
| PJ7C02 | 451C129010 | JACK-MINI - AV NET/IR BLAST | |
| **TU1A01** | **295P500010** | **TUNER-RF - ENG26515G** | |
| TU1B01 | 295P500010 | TUNER-RF - ENG26515G | |
| **TU5200** | **295P490030** | **TUNER-RF-DTV - ENA46914P4** | |
| X2A20 | 285P029030 | QUARTZ-CRYST - 4.000 MHZ | |
| X2B20 | 285P029030 | QUARTZ-CRYST - 4.000 MHZ | |
| X2C31 | 285P374050 | QUARTZ-CRYST - 20.000MHZ | |
| X2E26 | 285P374020 | QUARTZ-CRYST - 3.579545MHZ | |
| X2H26 | 285P066010 | QUARTZ-CRYST - 3.579545MHZ | |
| X50 | 285P410060 | QUARTZ-CRYST - 26.800MHZ | |
| X51X0 | 285P410020 | QUARTZ-CRYST - 24.576MHZ | |
| X5400 | 285P410050 | QUARTZ-CRYST - 9.216MHZ | |
| X54A0 | 285P410040 | QUARTZ-CRYST - 25.0MHZ | |
| X5500 | 285P410030 | QUARTZ-CRYST - 20.25MHZ | |
| X55A0 | 285P410090 | QUARTZ-CRYST - 13.5MHZ | |
| X7A13 | 285P374040 | QUARTZ-CRYST - 10.000MHZ | |
| X7H00 | 285P335040 | QUARTZ-CRYST - 60.000MHZ | |
| X7H01 | 285P335050 | QUARTZ-CRYST - 80.000MHZ | |

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| **Z5900** | **283P128050** | **FUSE-CHIP - AC125V/100V 4A** | |
| **Z5901** | **283P128050** | **FUSE-CHIP - AC125V/100V 4A** | |
| Z7K01 | 939P617010 | UNIT-PREAMP - GP1U283Q | |

## PRINTED CIRCUIT BOARDS

| | | |
|---|---|---|
| 930B866012 | ASSY-PWB-MAIN | 1346578 |
| 930B866013 | ASSY-PWB-MAIN | 9 |
| 930B866014 | ASSY-PWB-MAIN | 2 |
| 930B879002 | ASSY-PWB-POWER | |
| 930B880003 | ASSY-PWB-SIGNAL | 12356 |
| 930B880004 | ASSY-PWB-SIGNAL | 478 |
| 930B880005 | ASSY-PWB-SIGNAL | 9 |
| 955C230002 | ASSY-DM | |
| 935C965003 | ASSY-PWB-CRT | |
| 935C966002 | ASSY-PWB-2HDW | |
| 935C967001 | ASSY-PWB-TERMINAL | 12356 |
| 935C967002 | ASSY-PWB-TERMINAL | 4789 |
| 935C974001 | ASSY-PWB-DEMOD-B | 1 |
| 935C974002 | ASSY-PWB-DEMOD-B | 23456789 |
| 935C978001 | ASSY-PWB-E2P | 1 |
| 935C978002 | ASSY-PWB-E2P | 23456789 |
| 935C979002 | ASSY-PWB-DEMOD | 1 |
| 935C986002 | ASSY-PWB-DM POWER | |
| 935D521006 | ASSY-PWB-DBF | |
| 935D581002 | ASSY-PWB-PREAMP | |
| 935D583001 | ASSY-PWB-JUNGLE | 1 |
| 935D583002 | ASSY-PWB-JUNGLE | 23456789 |
| 935D584002 | ASSY-PWB-SVM | |
| 935D585001-48 | ASSY-PWB-CONV-GENE | 2 |
| 935D585001-55 | ASSY-PWB-CONV-GENE | 134 |
| 935D585001-65 | ASSY-PWB-CONV-GENE | 5678 |
| 935D585001-73 | ASSY-PWB-CONV-GENE | 9 |
| 935D586001 | ASSY-PWB-3DYC/MD | |
| 935D587002 | ASSY-PWB-CONTROL 2 | |
| 935D588003 | ASSY-PWB-FRONT | 12356 |
| 935D588004 | ASSY-PWB-FRONT | 4789 |
| 935D605002 | ASSY-PWB-CROSS OVER | 4789 |

## COSMETIC PARTS

| | | |
|---|---|---|
| 242D525010 | AC3 CABLE - AUDIO CABLE | |
| 299P254020 | IR-EMITTER, 4-HEAD - T-IR-0 | |
| 702A393050 | CONTROL PANEL | 5 |
| 702A398040 | COVER-CONTROL | 6 |
| 702A401020 | COVER CONTROL | 479 |
| 702A403020 | CONTROL PANEL | 1&3 |
| 702A407010 | DM, BACK PANEL - PLASTIC | |
| 702A399010 | TERMINAL-BOARD | |
| 760A007020 | TERMINAL INLAY - PC-SHEET | |
| 760A008010 | DM TERMINAL INLAY - PC-SHT | |
| 703B035010 | A/V-MOUNT-DOOR - PLASTIC | 8 |
| 704B192010 | RESET BUTTON | 1345679 |
| 704B198010 | PANEL-BUTTON - PLASTIC | 8 |
| 752A003020 | GRILLE-SP | 7 |
| 761A159040 | GRILLE-SP | 1&3 |
| 761A171040 | GRILLE-SPEAKER | 5 |
| 761A173030 | GRILLE-SPEAKER | 6 |
| 761A175010 | GRILLE-SP-LEFT - 65" | 7 |
| 761A175020 | GRILLE-SP-RIGHT - 65" | 7 |
| 761A186010 | GRILLE-SP-LEFT - 73" | 9 |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| | 761A186020 | GRILLE-SP-RIGHT - 73" | 9 |
| | 761A195010 | GRILLE-SPEAKER | 2 |
| | 761A174030 | GRILLE, SPEAKER | 4 |
| | 761A174040 | GRILLE, SPEAKER | 4 |
| | 761A199010 | GRILLE-SPEAKER | 8 |
| | 752A003030 | SPEAKER GRILL, TOP - PS | 9 |

## ACCESSORIES

| | | |
|---|---|---|
| | 290P109010 | TRANSMITTER-REMOTE - EUR761 |
| | I/B WSB55 | IB - OWNERS GUIDE |
| | I/QR V21 | QUICK REFERENCE GUIDE |
| | I/NET V21 | NET COMMAND GUIDE - BOOK |
| | I/SEP GUIDEV21 | |
| | | IB-SEPARATION GUIDE 5679 |
| | I/SEP GUIDEWS65712 | |
| | | IB-SEPARATION GUIDE 8 |

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| | | **SCREEN ASSEMBLY PARTS** | |
| | | **WS-48511 (Figure 1)** | |
| (1) | 491P138010 | SCREEN-LENTICULAR - 48" | 2 |
| (2) | 491P139010 | LENS-FRESNEL - 48" | 2 |
| (3) | 622B010010 | HOLDER-TOP | 2 |
| (4) | 622B011010 | HOLDER-BOTTOM | 2 |
| (5) | 622B012010 | HOLDER-SIDE | 2 |
| (6) | 622B013010 | CLIP-SHIELD-SIDE - 48" | 2 |
| (7) | 751A005020 | FRAME-SCREEN-BEZEL - PLASTIC | 2 |
| (8) | 760D628060 | DIAMOND SHIELD - 48" | 2 |
| (9) | 598D339010 | BRACKET,SCREEN SIDE - METAL | 2 |
| (10) | 635B109010 | STIFFENER-TOP - METAL | 2 |

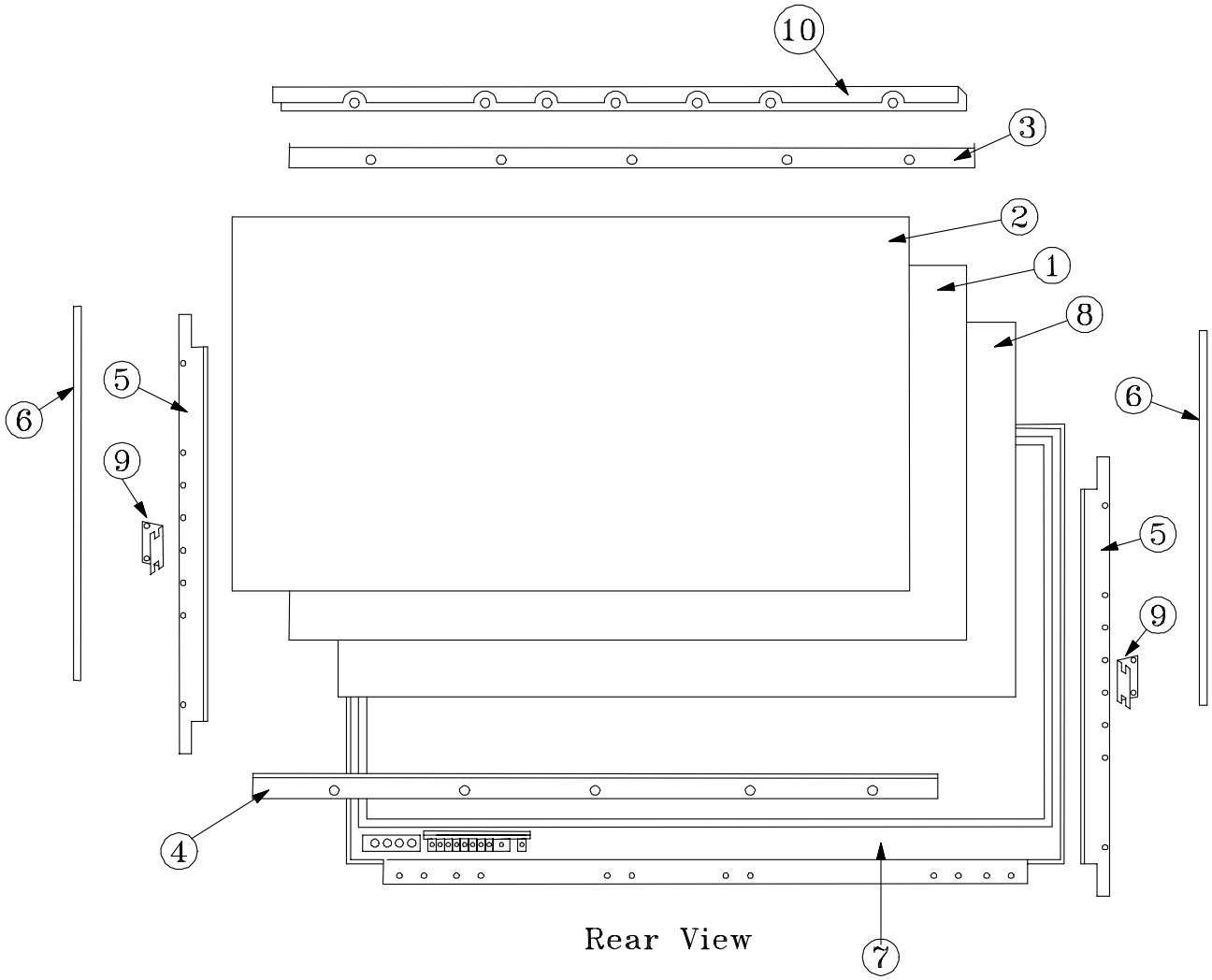



**Figure 1: WS-48511**

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

## SCREEN ASSEMBLY PARTS

### WS-B55 & WS-55511 (Figure 2)

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| (1) | 491P103030 | SCREEN-LENTICULAR - 55" | 1&3 |
| (2) | 491P104030 | LENS-FRESNEL - 55" | 1&3 |
| (3) | 702A403020 | CONTROL PANEL | 1&3 |
| (4) | 622C063040 | HOLDER-SCREEN-BOT | 1&3 |
| (5) | 701B454010 | FRAME SCREEN-TOP - 55" | 1&3 |
| (6) | 701B457030 | FRAME SCREEN-S - 55" | 1&3 |
| (7) | 702A388030 | CAP-CORNER-LEFT | 1&3 |
| (8) | 702A388040 | CAP-CORNER-RIGHT | 1&3 |
| (9) | 760D627060 | DIAMOND SHIELD - 55" | 3 |
| (9) | 760D639020 | DIAMOND SHIELD - 55" | 1 |
| (10) | 622C060040 | CLIP-SCREEN-TOP/BOT | 1&3 |

### WS-65511 (Figure 2)

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| (1) | 491P105030 | SCREEN-LENTICULAR - 65W V21 | 5 |
| (2) | 491P106050 | LENS-FRESNEL - 65W V21 | 5 |
| (3) | 702A393050 | CONTROL PANEL | 5 |
| (4) | 622C059050 | HOLDER-SCREEN-BOT | 5 |
| (5) | 701B454030 | FRAME SCREEN-TOP - 65" | 5 |
| (6) | 701B457040 | FRAME SCREEN-S - 65" | 5 |
| (7) | 702A388030 | CAP-CORNER-LEFT | 5 |
| (8) | 702A388040 | CAP-CORNER-RIGHT | 5 |
| (9) | 760D627070 | DIAMOND SHIELD - 65" | 5 |
| (10) | 622C060060 | CLIP-SCREEN-TOP/BOT | 5 |

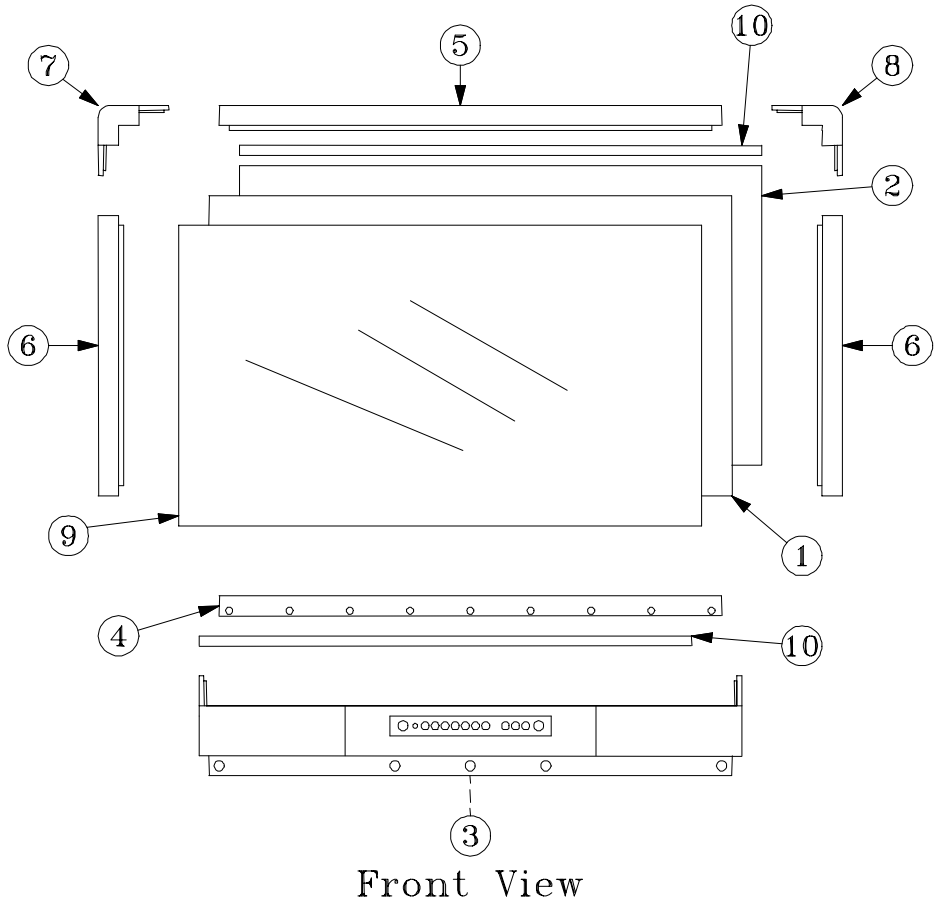



**Figure 2: WS-B55 / WS-55511 / WS-65511**

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| | | **SCREEN ASSEMBLY PARTS** | |
| | | **WS-65712 (Figure 3)** | |
| (1) | 491P105040 | SCREEN-LENTICULAR - LENTI-6 | 8 |
| (2) | 491P106060 | LENS-FRESNEL - FRESNEL-65W- | 8 |
| (3) | 622C090010 | CLIP-SHIELD - 65" | 8 |
| (4) | 702A408010 | CAP-CORNER - METAL | 8 |
| (5) | 702A409010 | CAP-CORNER-BOTTOM - METAL (RIGHT) | 8 |
| (6) | 702A409020 | CAP-CORNER-BOTTOM - METAL (LEFT) | 8 |
| (7) | 760D635020 | DIAMOND SHIELD | 8 |
| (8) | 701B466010 | FRAME-SIDE-AL - METAL | 8 |
| (9) | 701B467010 | FRAME-TOP-AL - METAL | 8 |
| (10) | 701B468010 | FRAME-BOTTOM-AL - METAL | 8 |

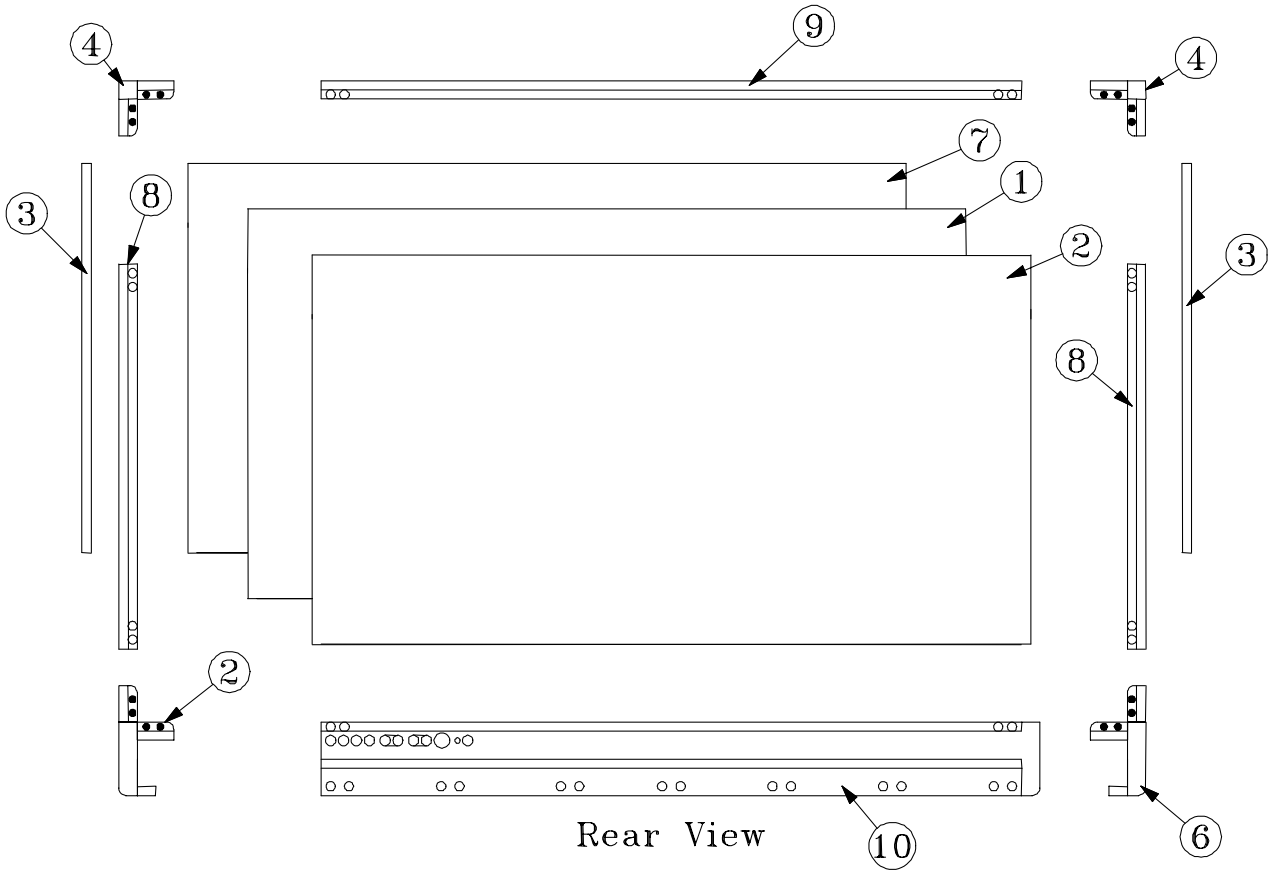



**Figure 3: WS-65712**

**[#] Model Legend:**
**(1) WS-B55, (2) WS-48511, (3) WS-55511, (4) WS-55711, (5) WS-65511, (6) WS-65611, (7) WS-65711, (8) WS-65712, (9) WS-73711**

## SCREEN ASSEMBLY PARTS

### WS-55711 (Figure 4)

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| (1) | 491P103030 | SCREEN-LENTICULAR - 55" | 4 |
| (2) | 491P104030 | LENS-FRESNEL - 55" | 4 |
| (3) | 711C029040 | FRAME-SCREEN-TOP - 55" | 4 |
| (4) | 711C029050 | FRAME-SCREEN-SIDES - 55" | 4 |
| (5) | 711C029060 | FRAME-SCREEN-BOTTOM - 55" | 4 |
| (6) | 760D635010 | DIAMOND SHIELD | 4 |
| (7) | 768C065010 | CAP-CORNER | 4 |
| (8) | 622D746080 | CLIP-SCREEN-SIDES | 4 |

### WS-65611 (Figure 4)

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| (1) | 491P105030 | SCREEN-LENTICULAR - 65W V21 | 6 |
| (2) | 491P106050 | LENS-FRESNEL - 65W V21 | 6 |
| (3&5) | 701B429020 | SCREEN-FRAME-TOP/BOT - 65" | 6 |
| (4) | 701B430020 | SCREEN-FRAME-SIDE - 65" | 6 |
| (6) | 760D627070 | DIAMOND SHIELD - 65" | 6 |
| (7) | 702A396010 | CAP-CORNERS | 6 |
| (9) | 622C071020 | CLIP-SCREEN-TOP/BOT | 6 |

### WS-65711 (Figure 4)

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| (1) | 491P105030 | SCREEN-LENTICULAR - 65W V21 | 7 |
| (2) | 491P106050 | LENS-FRESNEL - 65W V21 | 7 |
| (3) | 711C026040 | FRAME-SCREEN-TOP - 65" | 7 |
| (4) | 711C026050 | FRAME-SCREEN-SIDES - 65" | 7 |
| (5) | 711C026060 | FRAME-SCREEN-BOTTOM - 65" | 7 |
| (6) | 760D635020 | DIAMOND SHIELD | 7 |
| (7) | 768C065010 | CAP-CORNER | 7 |
| (8) | 622D746020 | CLIP-SCREEN-SIDES | 7 |

### WS-73711 (Figure 4)

| Ref # | Part # | Part Name & Description | [#] |
|---|---|---|---|
| (1) | 491P085030 | SCREEN-LENTICULAR - 73" | 9 |
| (2) | 491P086030 | LENS-FRESNEL - 73" | 9 |
| (3) | 711C029070 | FRAME-SCREEN-TOP - 73" | 9 |
| (4) | 711C029080 | FRAME-SCREEN-SIDES - 73" | 9 |
| (5) | 711C029090 | FRAME-SCREEN-BOTTOM - 73" | 9 |
| (6) | 760D635030 | DIAMOND SHIELD - 73" | 9 |
| (7) | 768C065010 | CAP-CORNER | 9 |
| (8) | 622D746010 | CLIP-SCREEN-SIDES | 9 |

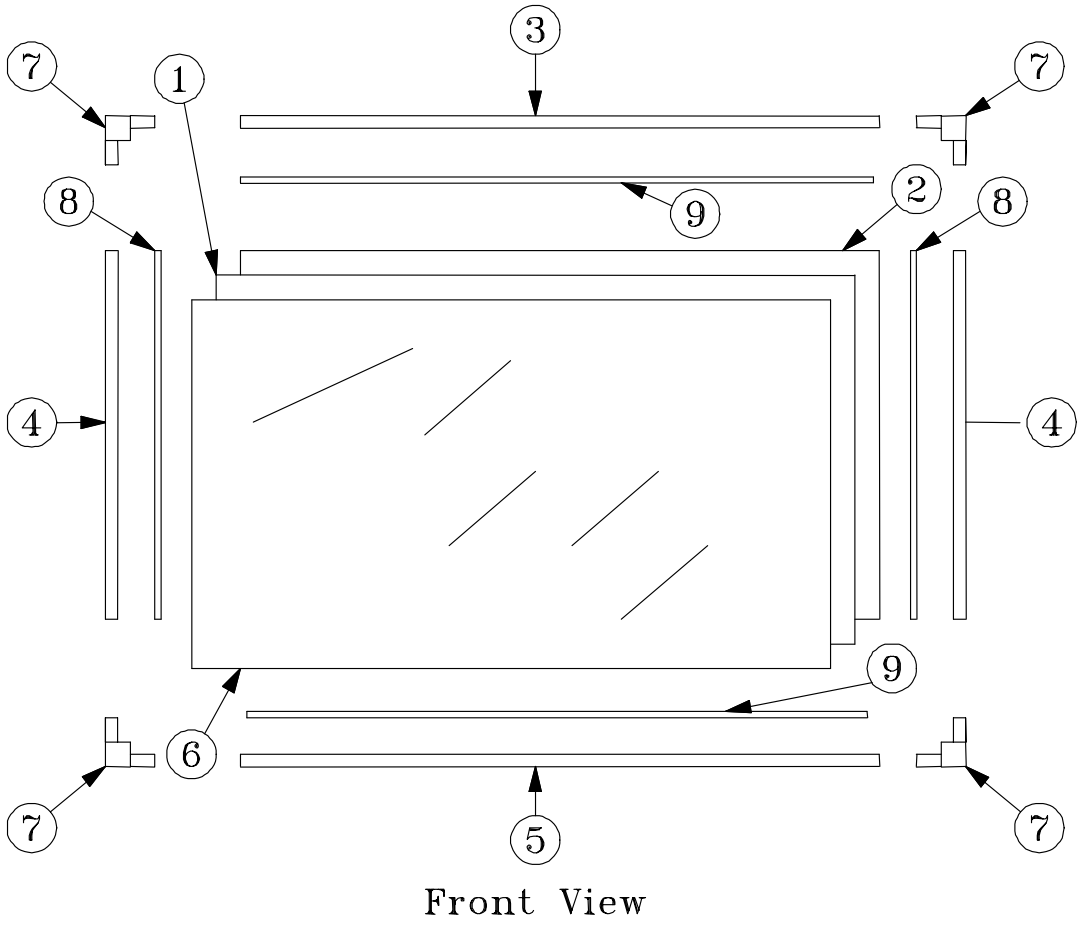
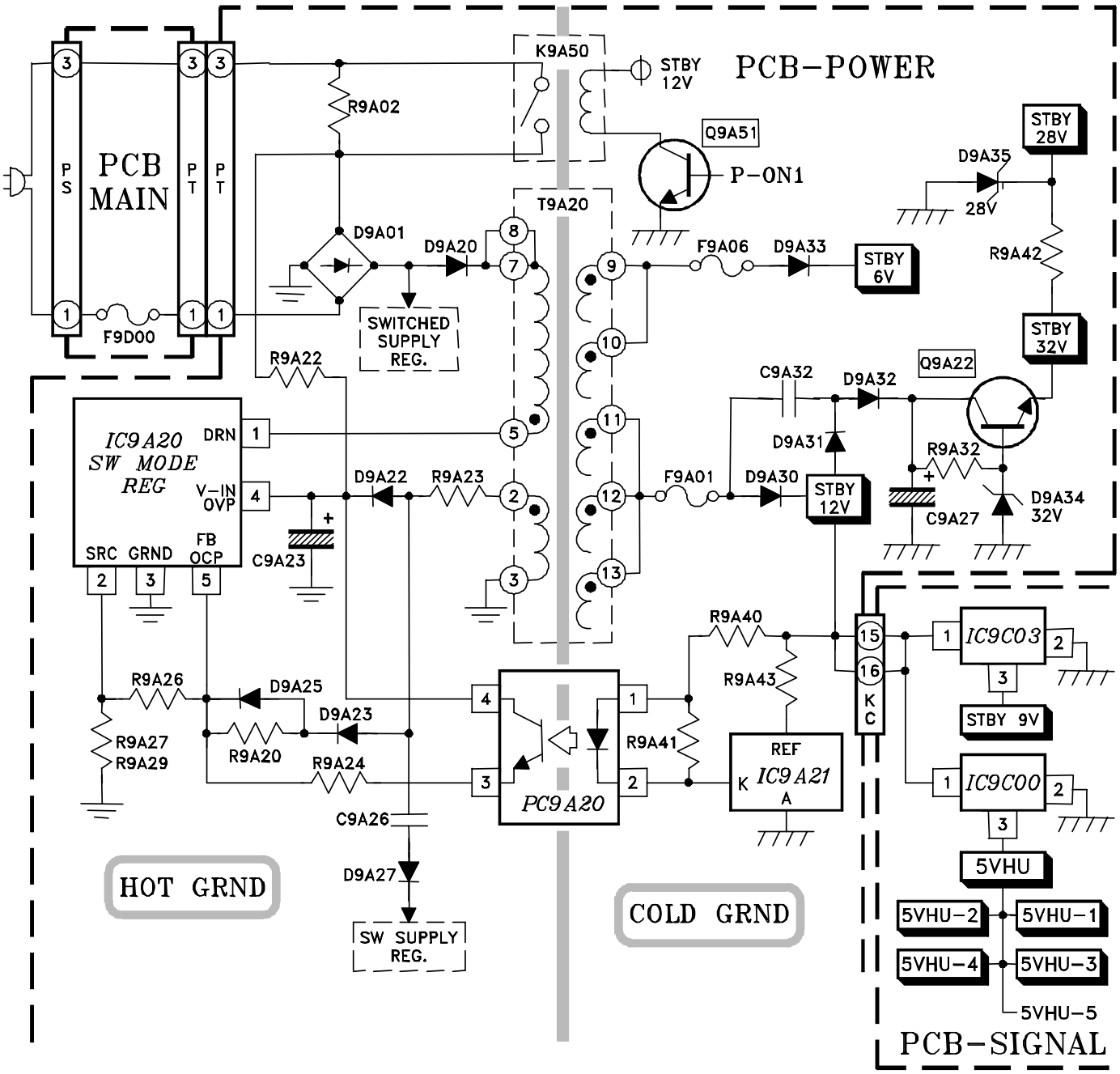
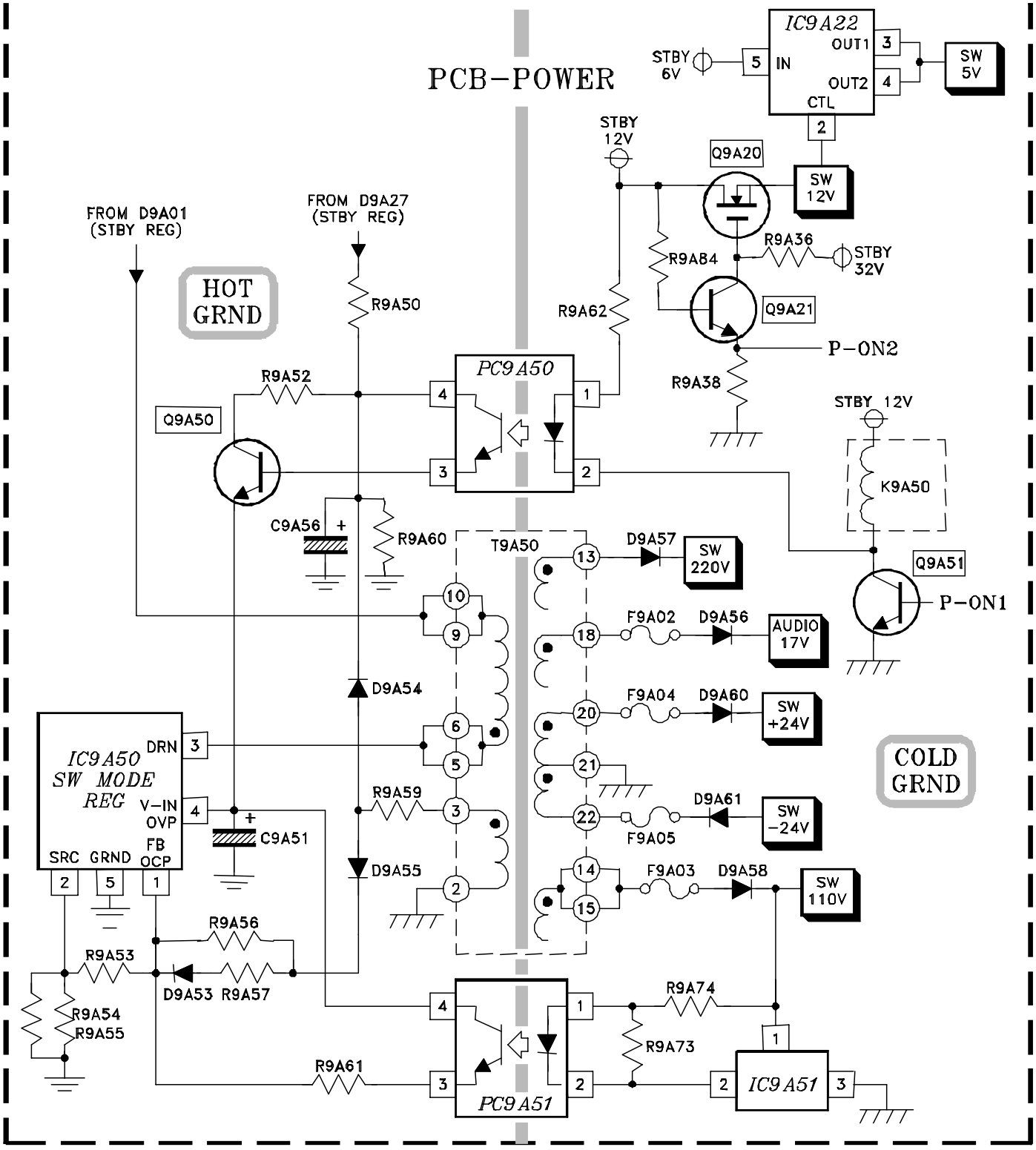



**Figure 4: WS-55711 / WS-65611 / WS65711 / WS-73711**

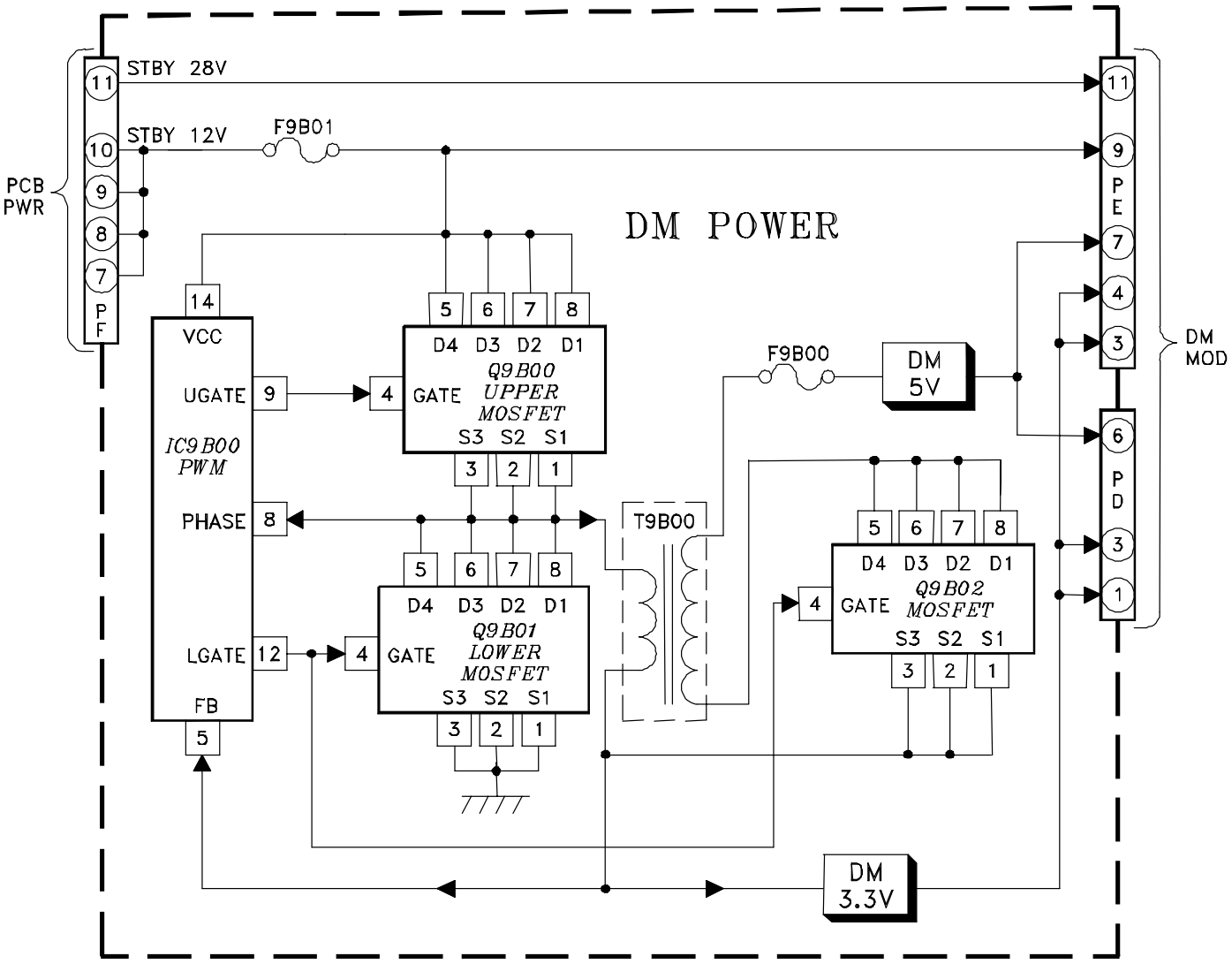
# STANDBY SUPPLIES REGULATOR



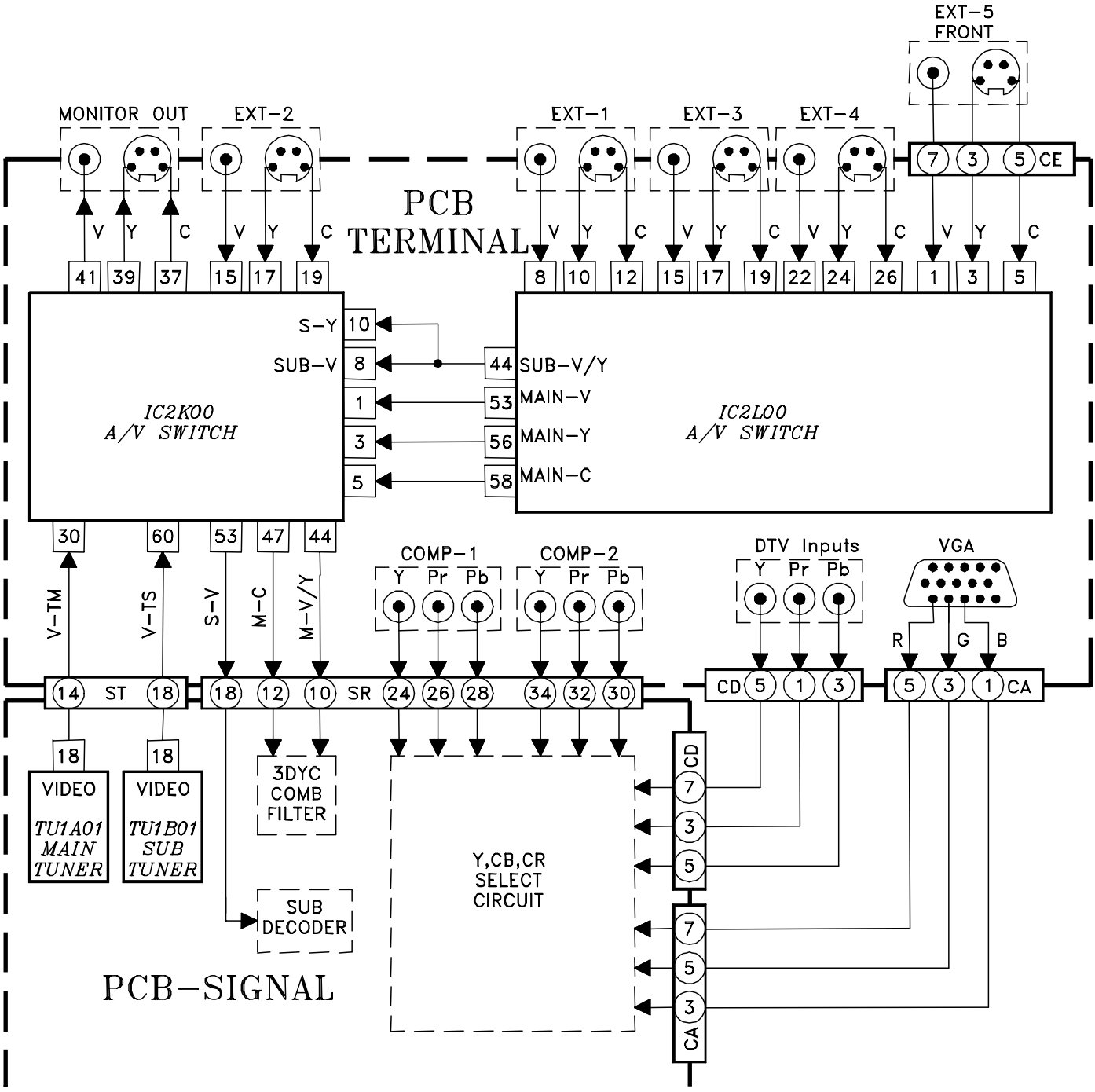
# SWITCHED SUPPLIES REGULATOR



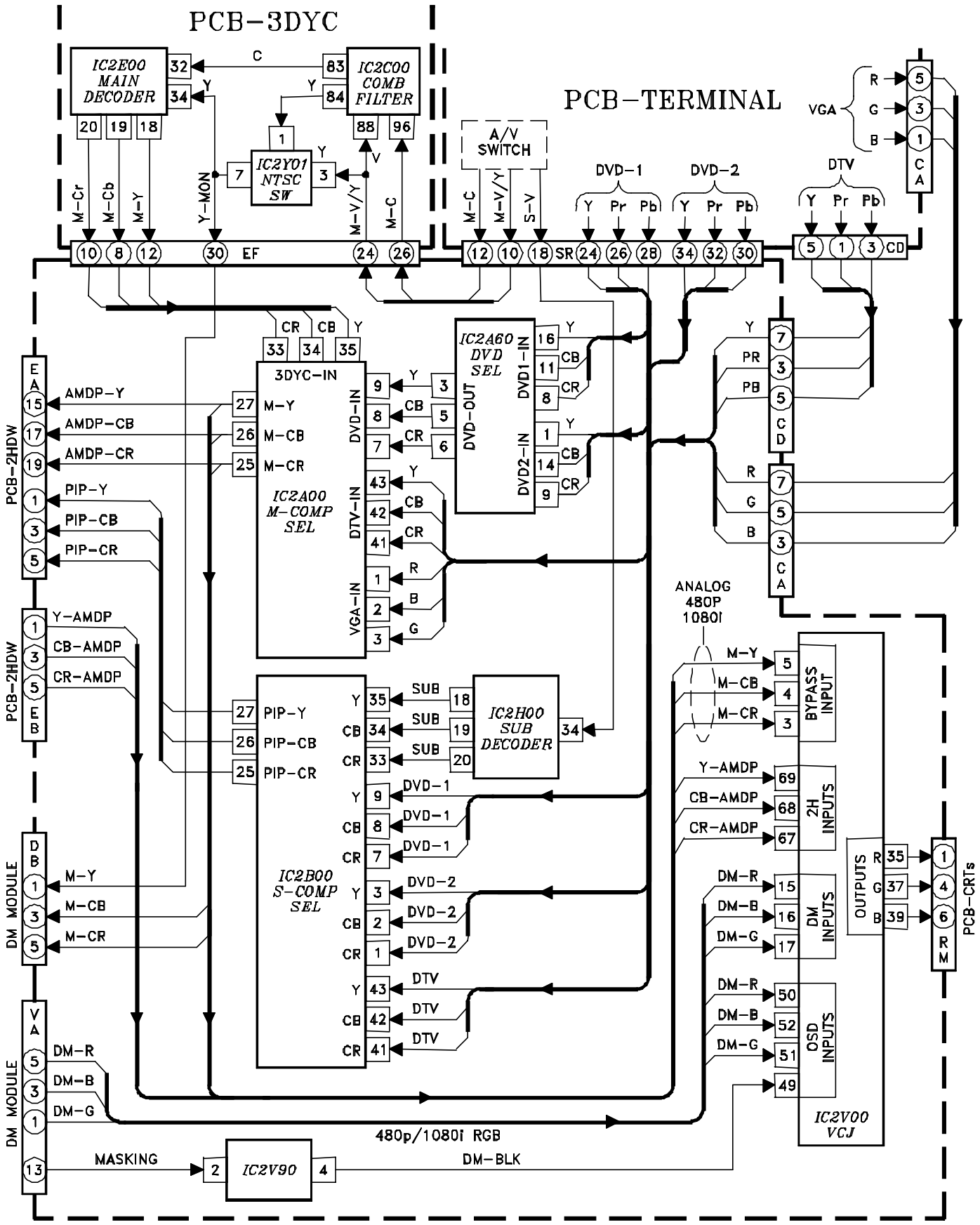
# DM POWER SUPPLY



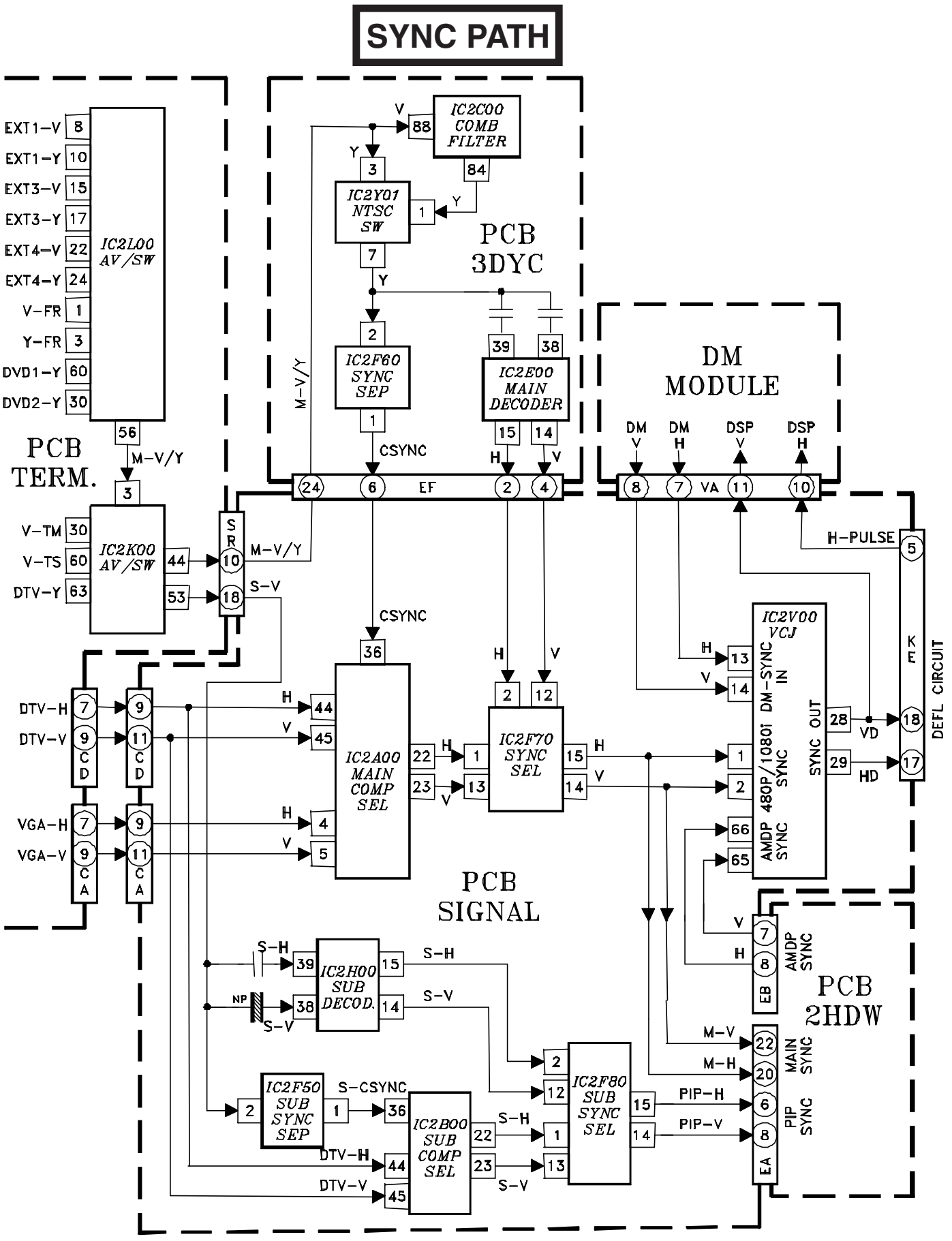
# VIDEO/COLOR A/V SWITCH CIRCUIT



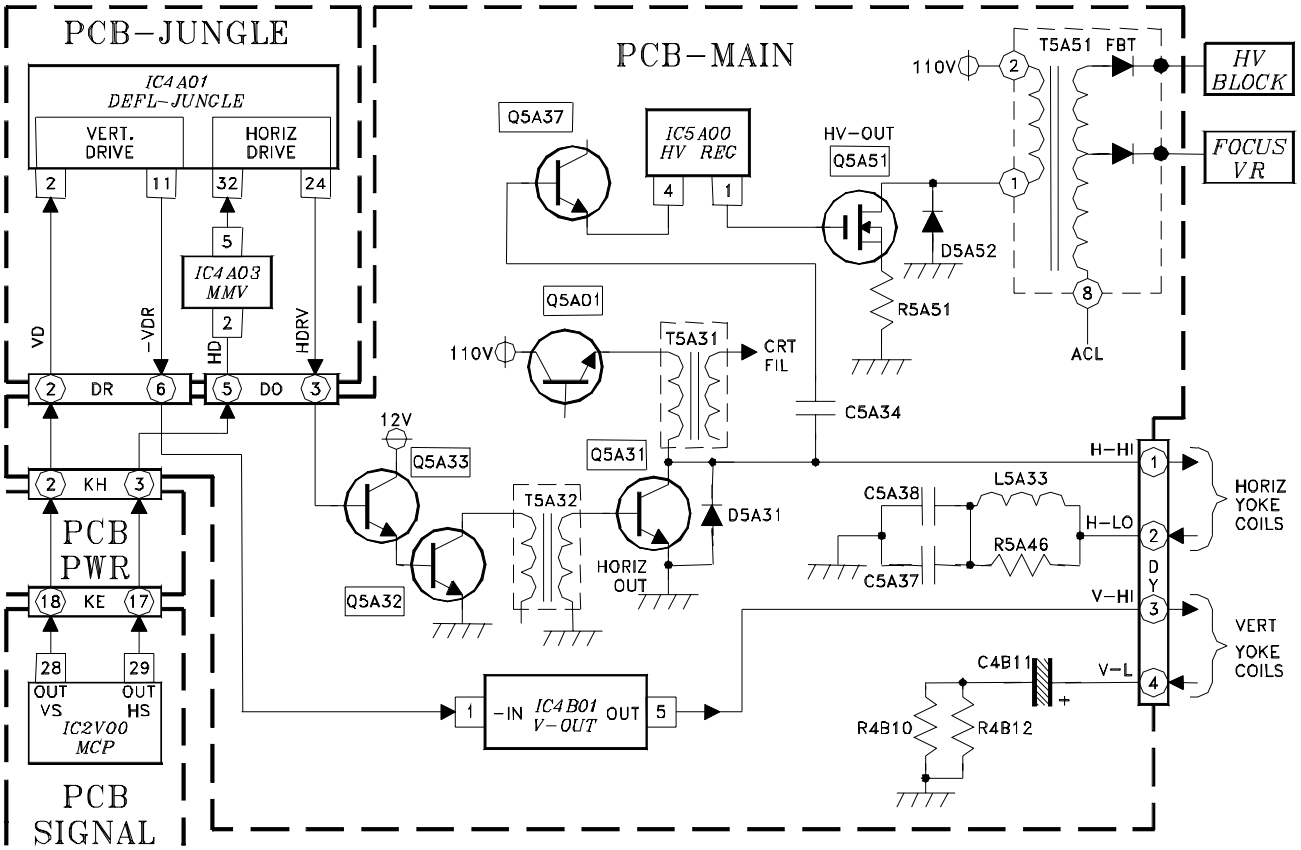
# PCB-SIGNAL Y/C PATH

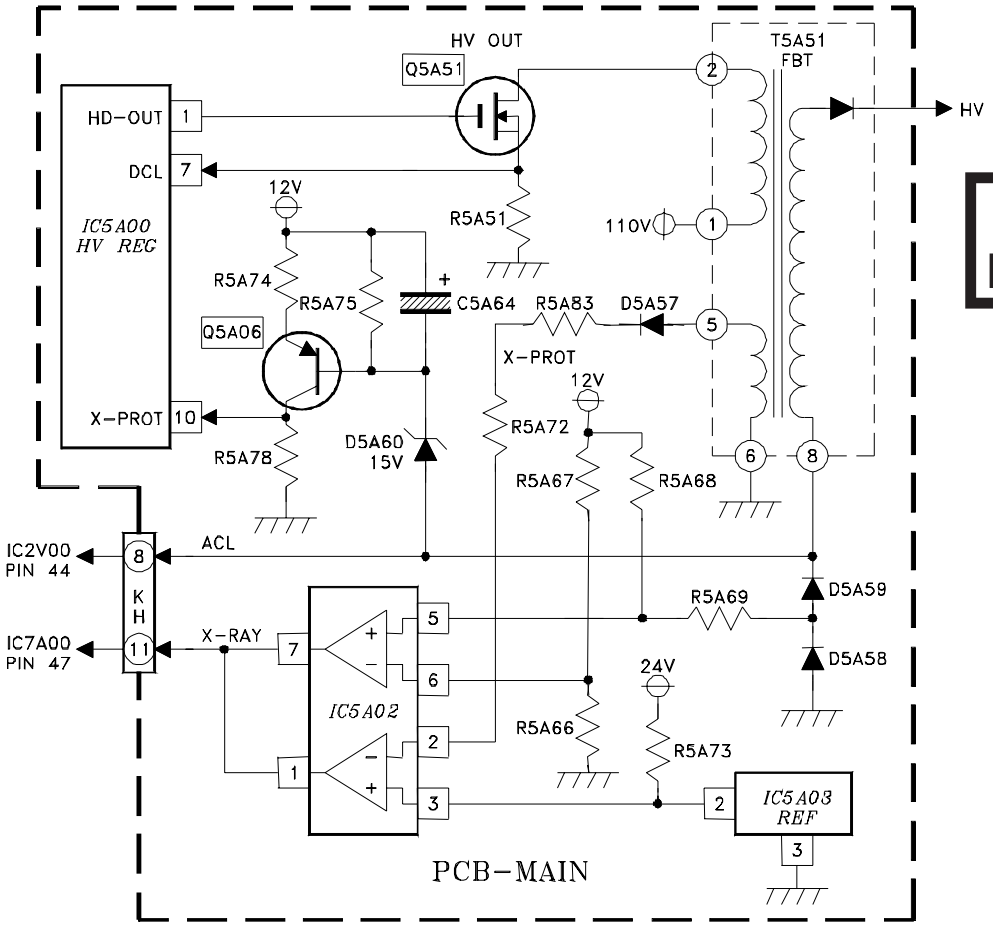


# SYNC PATH


EXT1-V 8
EXT1-Y 10
EXT3-V 15
EXT3-Y 17
EXT4-V 22
EXT4-Y 24
V-FR 1
Y-FR 3
DVD1-Y 60
DVD2-Y 30
IC2L00 AV/SW
56
M-V/Y
3
PCB TERM.
V-TM 30
V-TS 60
DTV-Y 63
IC2K00 AV/SW
44
53
S R
10
18
M-V/Y
S-V
V 88
IC2C00 COMB FILTER
84
Y 3
IC2Y01 NTSC SW
1
Y
7
Y
PCB 3DYC
2
IC2F60 SYNC SEP
1
CSYNC
M-V/Y
39
38
IC2E00 MAIN DECODER
15
14
H
V
DM MODULE
DM V
DM H
DSP V
DSP H
24
6
EF
2
4
8
7
VA
11
10
H-PULSE
5
CSYNC
36
DTV-H 7
DTV-V 9
CD 9
11
CD
VGA-H 7
VGA-V 9
CA 9
11
CA
H 44
V 45
IC2A00 MAIN COMP SEL
22
23
H
V
1
13
IC2F70 SYNC SEL
2
12
15
14
H
V
H 4
V 5
PCB SIGNAL
IC2V00 VCJ
H 13
V 14
DM-SYNC IN
480P/1080I SYNC
AMDP SYNC
66
65
SYNC OUT
28
29
VD
HD
18
17
KE DEFL CIRCUIT
S-H 39
NP 38
S-V
IC2H00 SUB DECOD.
15
14
S-H
S-V
V 7
H 8
EB
AMDP SYNC
PCB 2HDW
IC2F50 SUB SYNC SEP
2
1
S-CSYNC
36
DTV-H 44
DTV-V 45
IC2B00 SUB COMP SEL
22
23
S-H
S-V
2
12
1
13
IC2F80 SUB SYNC SEL
15
14
PIP-H
PIP-V
M-V 22
M-H 20
6
8
EA
MAIN SYNC
PIP SYNC

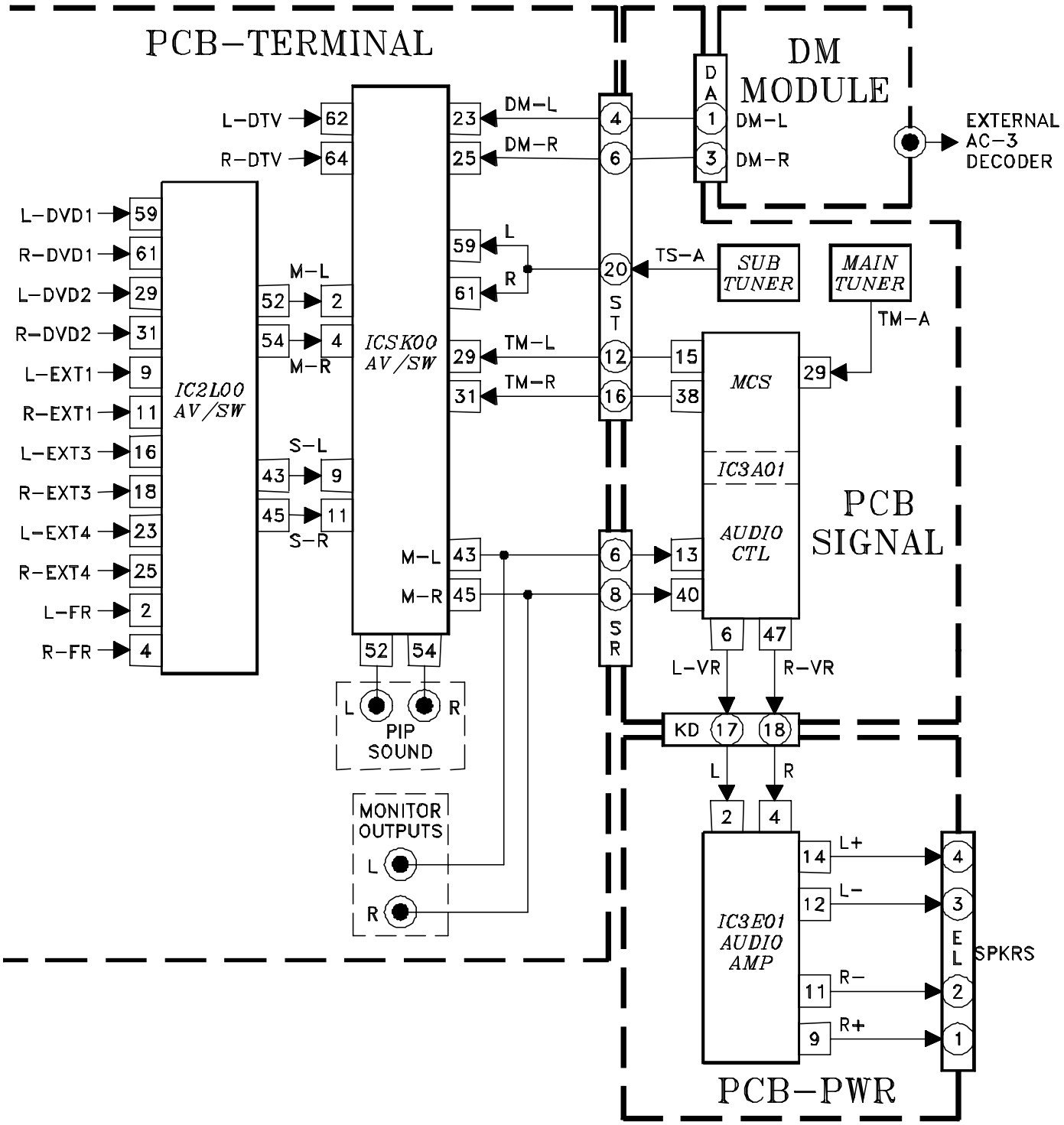
# DEFLECTION CIRCUIT



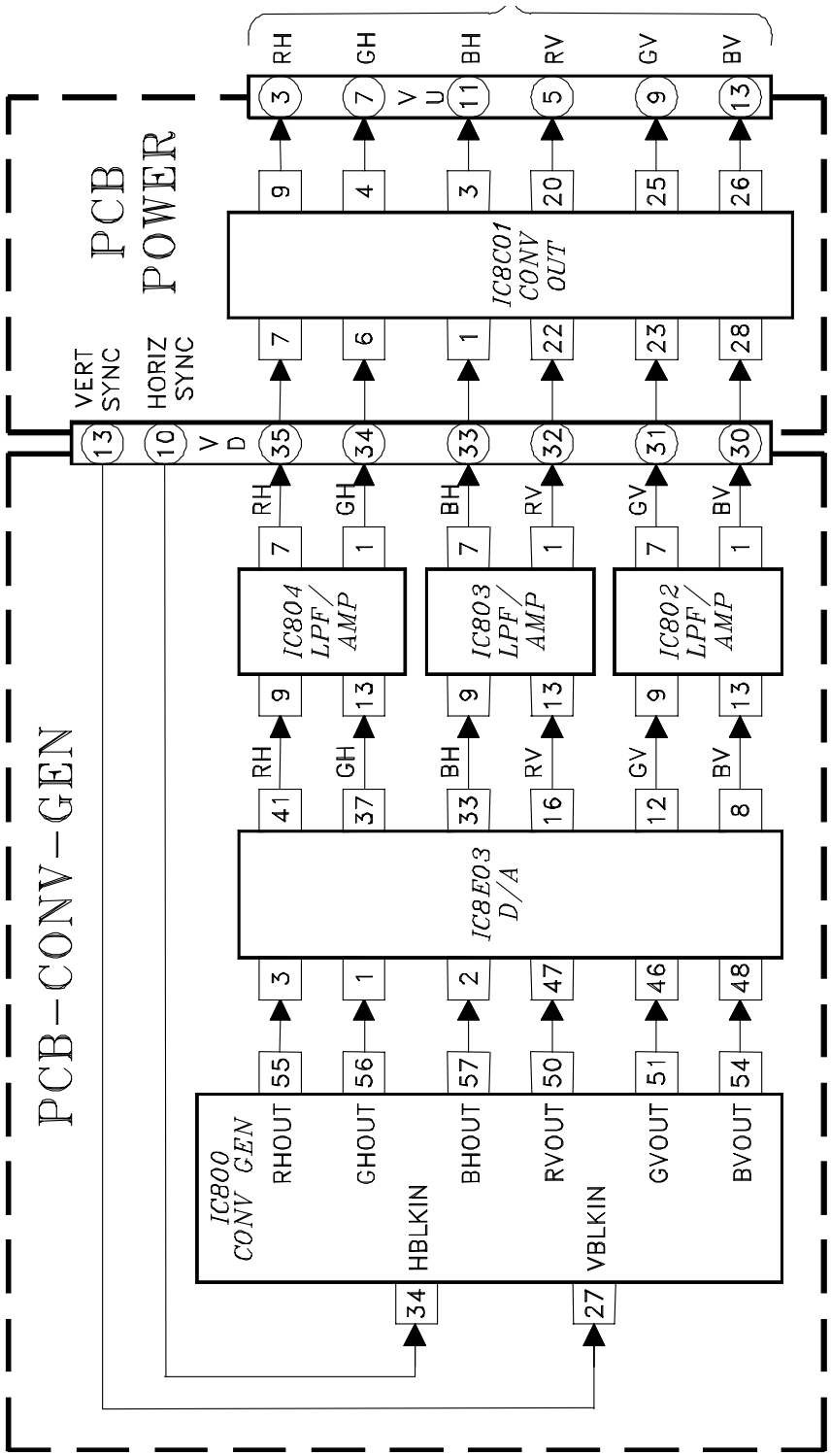




# X-RAY PROTECT

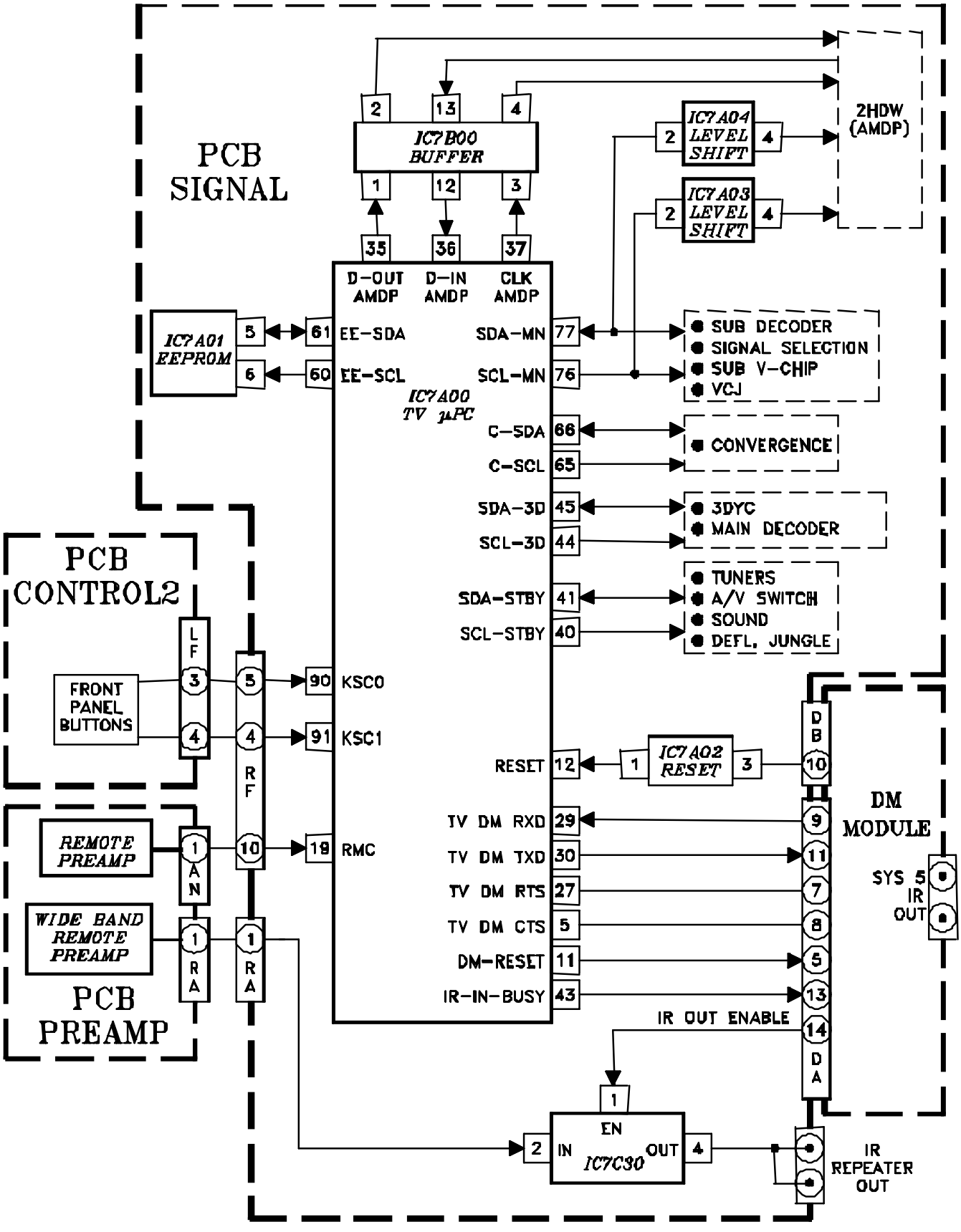
# SOUND CIRCUIT



# CONVERGENCE CIRCUIT



# CONTROL CIRCUIT

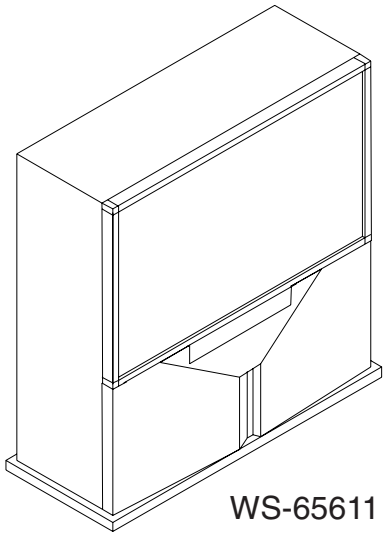


2002

MITSUBISHI ELECTRIC

# Service Manual

**PROJECTION TELEVISION**
**V21 / V21+ / V21++ CHASSIS**



WS-65611

| V21 MODELS | V21+ MODELS | V21++ MODELS |
|---|---|---|
| WS-48511 | WS-65611 | WS-55711 |
| WS-55511 | | WS-65711 |
| WS-65511 | | WS-65712 |
| WS-B55 | | WS-73711 |

**CAUTION:**
Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in Part 1 of this manual.

# PART 2
# SCHEMATIC DIAGRAMS

**CONTENTS** **Page**


Overall PCB Block Diagram ..... 1
PCB-MAIN ..... 2
PCB-POWER ..... 3
PCB-POWER ..... 4
PCB-SIGNAL-1 (AV I/O) ..... 5
PCB-SIGNAL-2 (MICRO) ..... 6
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PCB-3DYC ..... 8
PCBs-CONV GEN / JUNGLE ..... 9
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**Refer to PART 1 for:**

- Specifications
- Safety Precautions
- Disassembly
- CRT Replacement
- Electrical Adjustments
- Parts List
- Block Diagrams


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9351 Jeronimo Road, Irvine, CA 92618-1904


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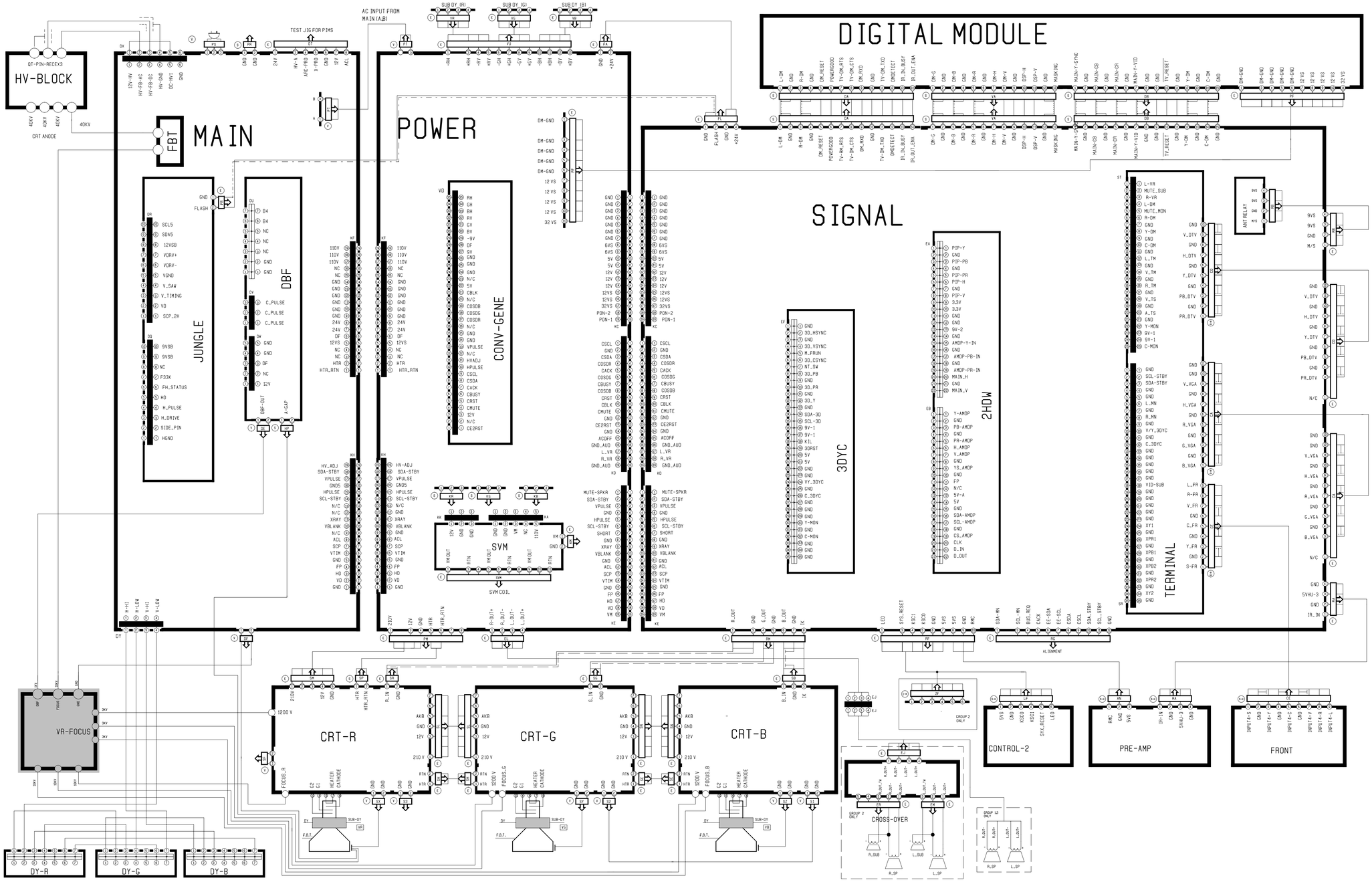


NOTES

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with standard color bar signal
3. TP13, etc. show Test Points
4. CAPACITORS

| | | | |
|---|---|---|---|
| Value | Not indicated | [ PF, for numbers more than 1<br>μF, for numbers less than 1 ] | |
| Dielectric Strength | Not indicated : 50V | | |
| Tolerance | Not indicated = ±10%<br>[ No tolerance is indicated for electrolytic capacitors and ±20% ] | | |
| | G = ±2% | P = +100% | Q = +30% | C = ±0.25PF |
| | J = ±5% | | -0% | -10% | D = ±0.5PF |
| | K = ±10% | Z = +80% | T = +200% | F = ±1PF |
| | M = ±20% | -20% | -0% | G = ±2PF |
| Type I Parts except for chips | Not indicated : Ceramic capacitor | | | |
| | MF : Polyester capacitor | | | |
| | PP : Polypropylene film capacitor | | | |
| | ALM : Aluminus electrolytic capacitor | | | |
| | TF : Twin film capacitor | | | |
| | SC : Semiconductor Ceramic capacitor | | | |
| | MP : Metalized paper | | | |
| | MPF : Metalized plastic film capacitor | | | |
| | MMF : Metalized polyester capacitor | | | |
| | MF2P : Polyester polypropylene film capacitor | | | |
| | PS : Styrol capacitor | | | |
| | TAN or ANT : Tantalum capacitor | | | |
| | : Electrolytic capacitor | | | |
| | NP : Non polarized electrolytic capacitor | | | |
| Type II Chips | Not indicated : Ceramic capacitor chip | | | |
| | : Electrolytic capacitor | | | |
| | NP : Non polarized electrolytic capacitor chip | | | |
| Characteristic (only ceramic capacitor) | Not indicated : F or B (high dielectric percentage)<br>CH, SL, etc. : Temperature compensating types | | | |

5. RESISTORS

| | | |
|---|---|---|
| Value | Not indicated = Ohm<br>K = 1,000 Ohm<br>M = 1,000,000 Ohm | |
| Wattage | Parts except for chips | Not indicated = 1/4W or 1/8W |
| | Chips | Not indicated = 1/8W |
| Tolerance | Not indicated = ±5%<br>D = ±0.5% J = ±5%<br>F = ±1% K = ±10% | |
| Type I Parts except for chips | Not indicated : Carbon resistor | |
| | S : Fixed composition resistor | |
| | MG : Metal oxide film resistor (type B) | |
| | CE : Cemented resistor | |
| | W : Wire wound resistor | |
| | R : Metal film resistor | |
| | MFC : Metal plate cement resistor | |
| | ML : Metal liner resistor | |
| Type II Chip | Not indicated : Chip resistor | |

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL. DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

SERVICE TECHNICIAN WARNING:
X-RADIATION PRECAUTION
THIS PRODUCT INCLUDES CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RADIATION PROTECTION.
TO AVOID POSSIBLE EXPOSURE TO X-RADIATION TAKE X-RADIATION PROTECTIVE MEASURES FOR PERSONNEL DURING SERVICING.
SEE SERVICE INSTRUCTIONS FOR SPECIFIED REPLACEMENT PARTS AND SERVICE ADJUSTMENTS.

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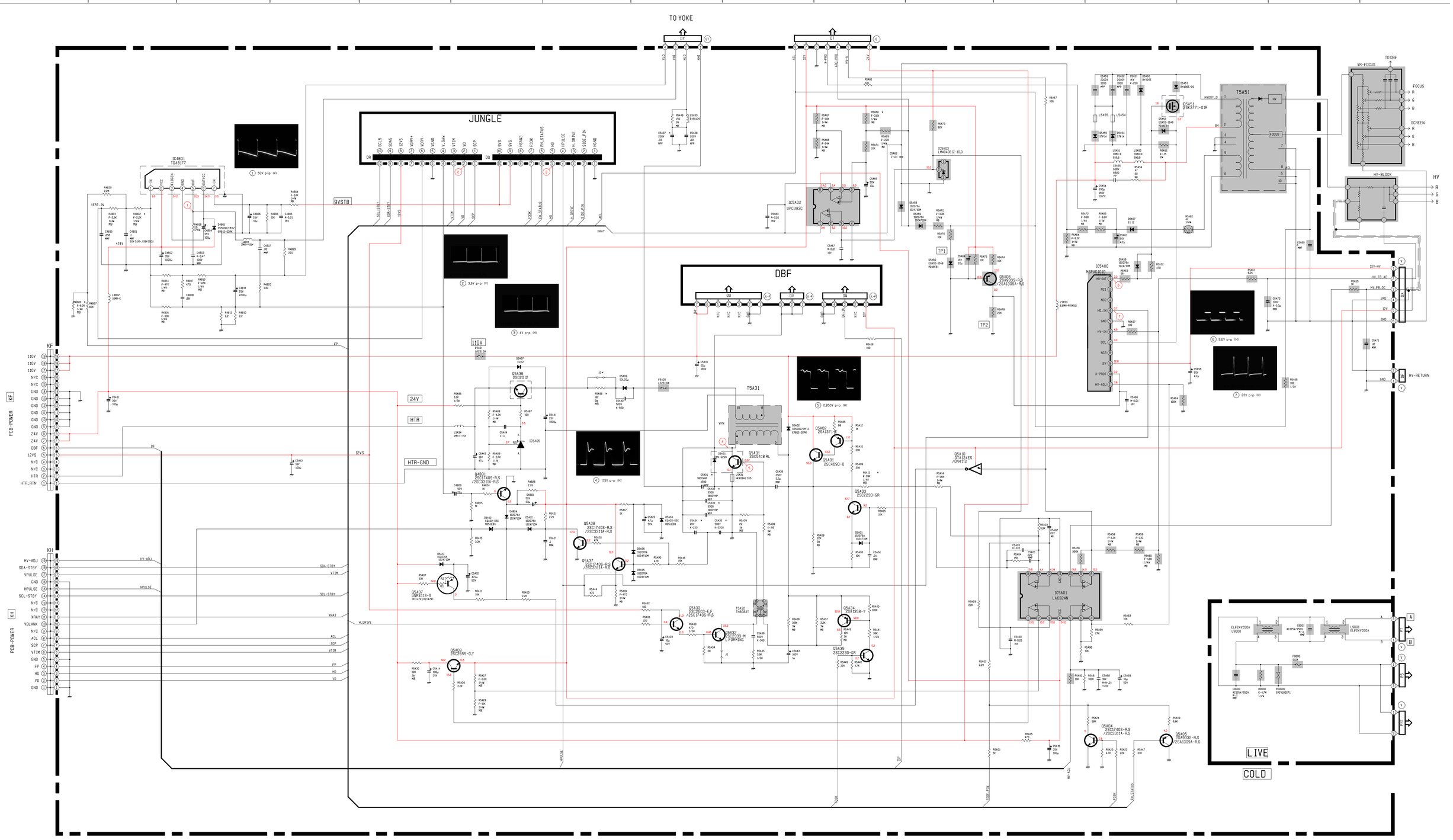
PG.6_ SIGNAL-2 (MICRO)
PG.7_ SIGNAL-3 (VIDEO/CHROMA)
PG.8_ 3DYC
PG.9_ CONV GEN/JUNGLE
PG.10_ CRT/CONTROL/FRONT/PREAMP/DM POWER
PG.11_ DOUBLER-1 (IN)
PG.12_ DOUBLER-2 (MAIN)
PG.13_ DOUBLER-3 (OUT)


| GROUP | MODEL | | | |
|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | |
| 2 | WS-55611 | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 |
| 4 | WS-72711 | | | |

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PG.8.... 3DYC
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PG.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
PG.11.. DOUBLER-1 (IN)
PG.12.. DOUBLER-2 (MAIN)
PG.13.. DOUBLER-3 (OUT)


| GROUP | MODEL | | | |
|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | |
| 2 | WS-55711 | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 |
| 4 | WS-73711 | | | |

LIVE

COLD

PCB-MAIN PT

PCB-SIGNAL-3 KC

PCB-DM POWER PF

STANDBY TRANSFORMER

MAIN TRANSFORMER VPM450

CONVERGENCE OUT AMPLIFIER

CONV-GENERATOR

AUDIO AMPLIFIER

POWER

(TO SIGNAL PWB)

PCB-SVM KA

PCB-SVM KK

PCB-CRT (R) SM

PCB-MAIN KF

PCB-MAIN KH

(TO SPEAKERS)

CONTENTS


PG.1.... BLOCK DIAGRAM
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PG.6.... SIGNAL-2 (MICRO)
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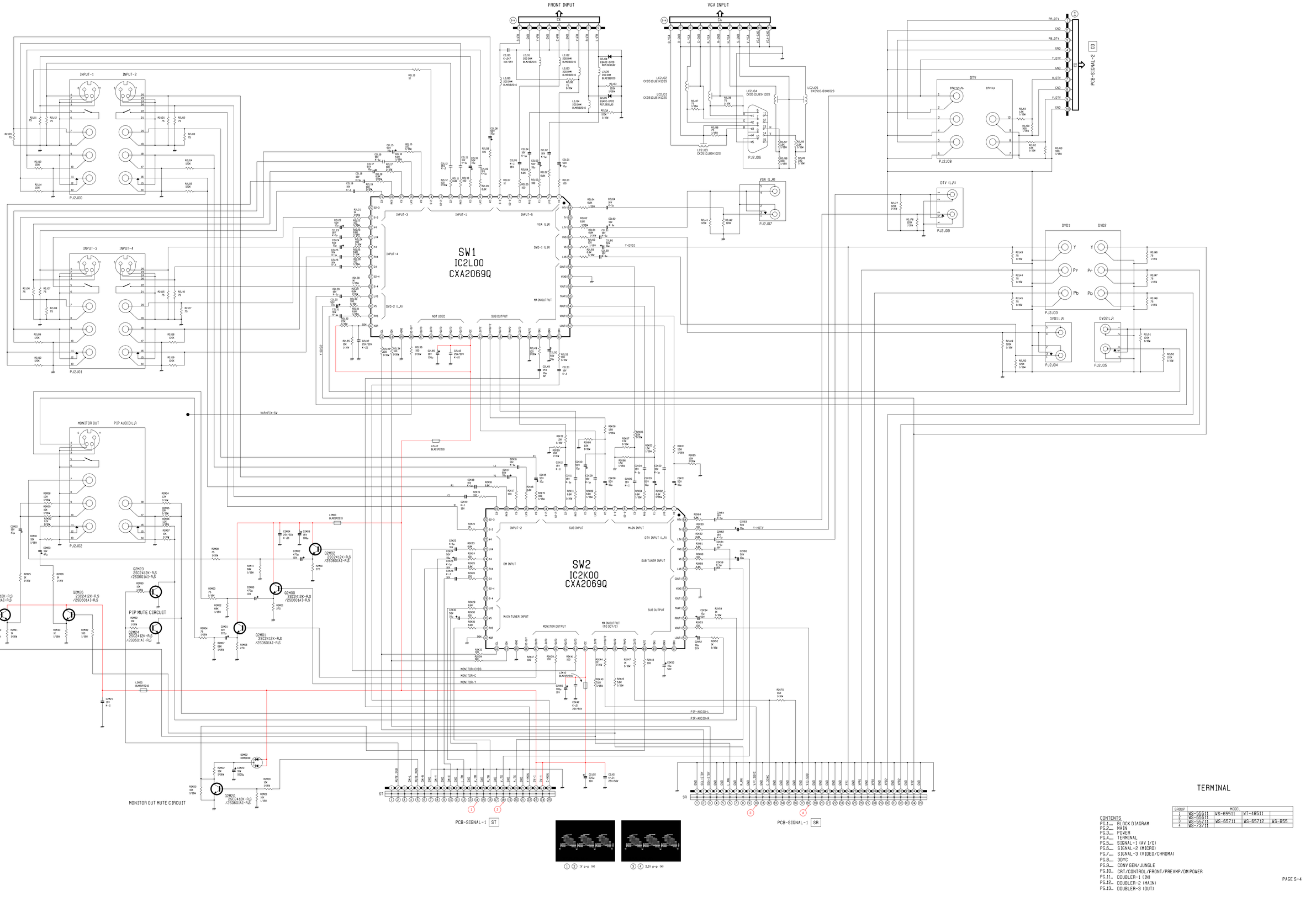
PG.12.. DOUBLER-2 (MAIN)
PG.13.. DOUBLER-3 (OUT)


| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | | |
| 2 | WS-55711 | | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-B55 | |
| 4 | WS-73711 | | | | |




## TERMINAL

| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | | |
| 2 | WS-55611 | | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 | |
| 4 | WS-73711 | | | | |

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PG.13.. DOUBLER-3 (OUT)

SIGNAL-2 (MICRO)

SIGNAL-3 (VIDEO/CHROMA)

SIGNAL-3 (VIDEO/CHROMA)

MAIN SYNC SWITCHING LOGIC

| | |
|---|---|
| MN-SYNC-SW=H | SYNC FROM CXA2151Q |
| MN-SYNC-SW=L | SYNC FROM CXA2019AQ |

MAIN SYNC DETECT (SD1)

SUB SYNC DETECT (SD2)

| ANT-A | M/S | RF PATH |
|---|---|---|
| H | SV | ANTA-->MAIN<br>ANTA-->P.IP |
| L | SV | ANTB-->MAIN<br>ANTA-->P.IP |

SUB SYNC SWITCHING LOGIC

| | |
|---|---|
| SUB-SYNC-SW=H | SYNC FROM CXA2151Q |
| SUB-SYNC-SW=L | SYNC FROM CXA2019AQ |

DVD SWITCHING LOGIC

| | |
|---|---|
| DVD-SW=H | DVD INPUT-2 SELECTED |
| DVD-SW=L | DVD INPUT-1 SELECTED |

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PG.1.... BLOCK DIAGRAM
PG.2.... MAIN
PG.3.... POWER
PG.4.... TERMINAL
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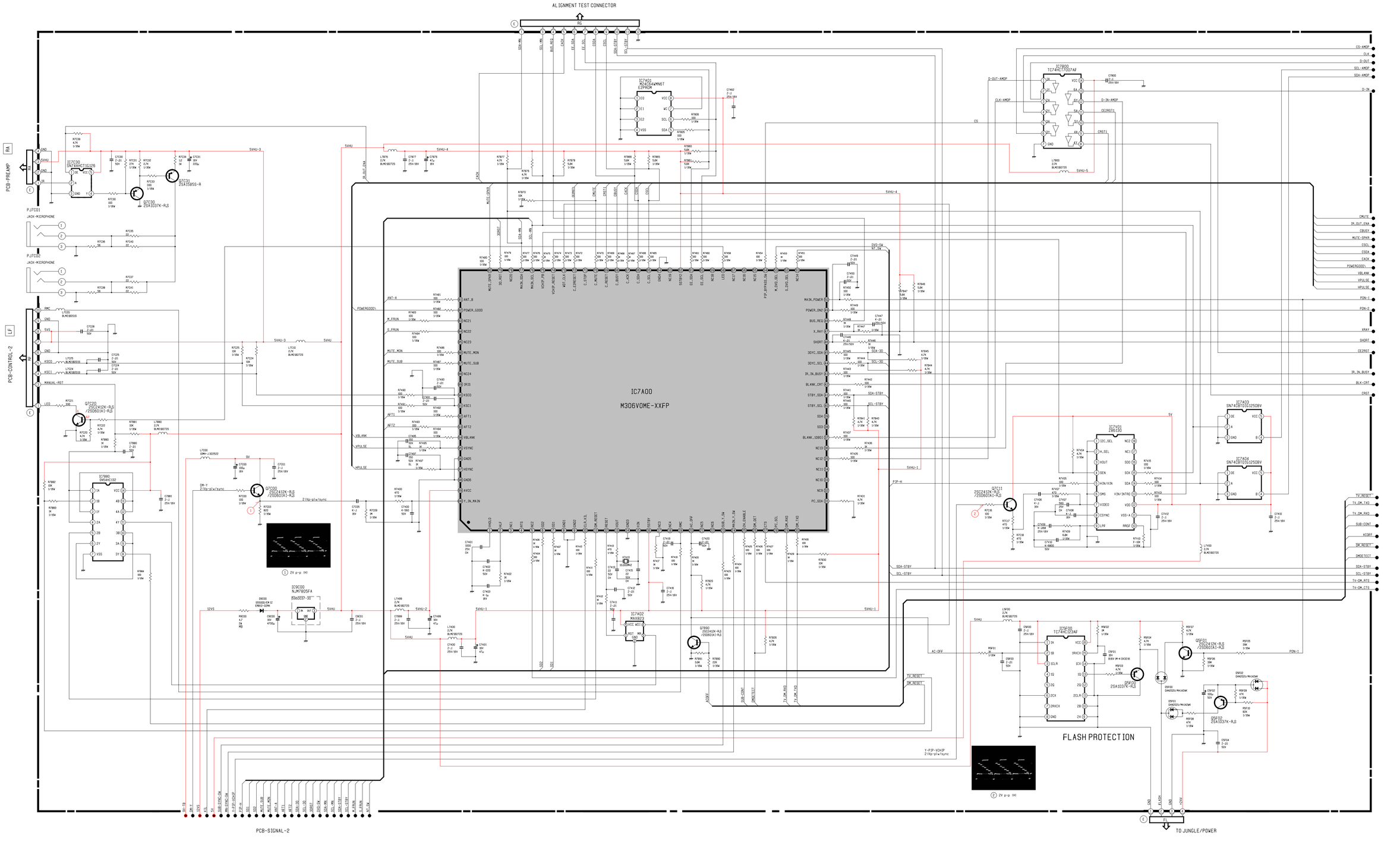
PG.6.... SIGNAL-2 (MICRO)
PG.7.... SIGNAL-3 (VIDEO/CHROMA)
PG.8.... 3DYC
PG.9.... CONV GEN/JUNGLE
PG.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
PG.11.. DOUBLER-1 (IN)
PG.12.. DOUBLER-2 (MAIN)
PG.13.. DOUBLER-3 (OUT)


| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55611 | WS-65511 | WT-48511 | | |
| 2 | WS-55611 | | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 | |
| 4 | WS-73711 | | | | |

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PG.1.... BLOCK DIAGRAM
PG.2.... MAIN
PG.3.... POWER
PG.4.... TERMINAL
PG.5.... SIGNAL-1 (AV I/O)
PG.6.... SIGNAL-2 (MICRO)
PG.7.... SIGNAL-3 (VIDEO/CHROMA)
PG.8.... 3DYC
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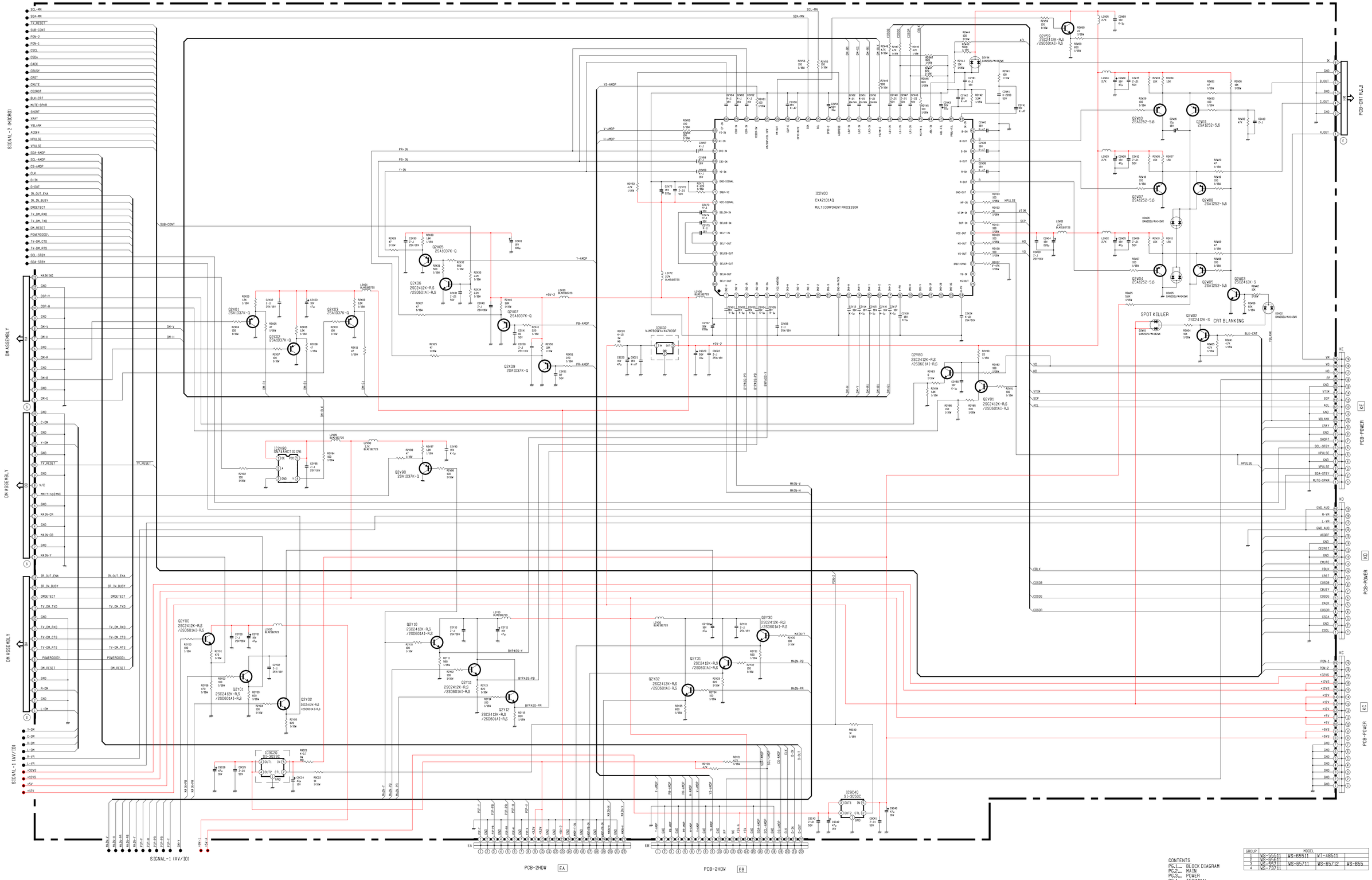
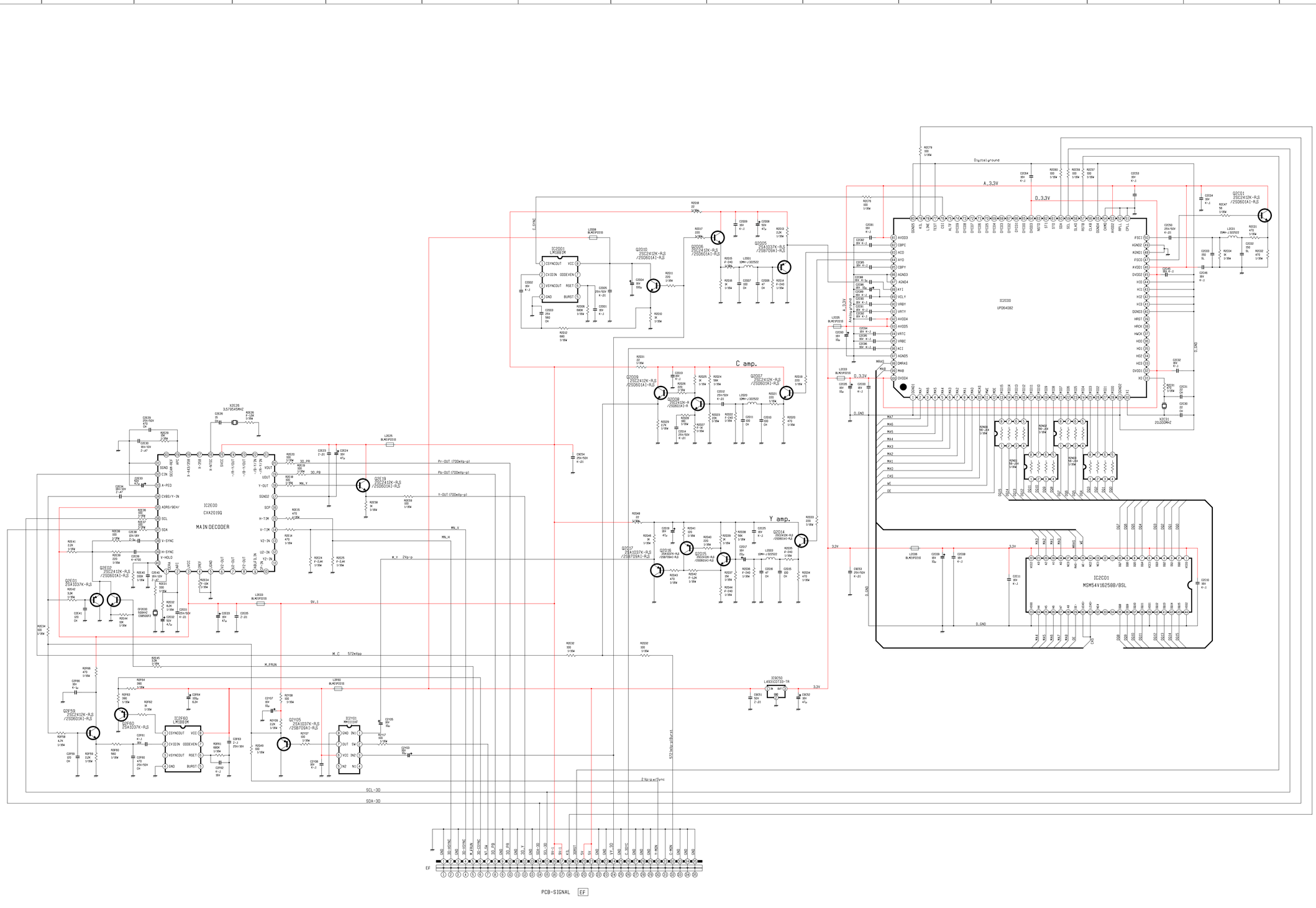
PG.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
PG.11.. DOUBLER-1 (IN)
PG.12.. DOUBLER-2 (MAIN)
PG.13.. DOUBLER-3 (OUT)


| GROUP | MODEL | | | |
|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | |
| 2 | WS-65611 | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 |
| 4 | WS-73711 | | | |

* EXCEPT WHERE NOTED, ALL OPEN-ENDED CIRCUIT PATHS CONNECT TO THE SIGNAL-3 SCHEMATIC




| GROUP | MODEL | | | |
|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | |
| 2 | WS-65611 | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 |
| 4 | WS-73711 | | | |




| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | | |
| 2 | WS-55611 | | | | |
| 3 | WS-55711 | | WS-65712 | | WS-855 |
| 4 | WS-73711 | | | | |

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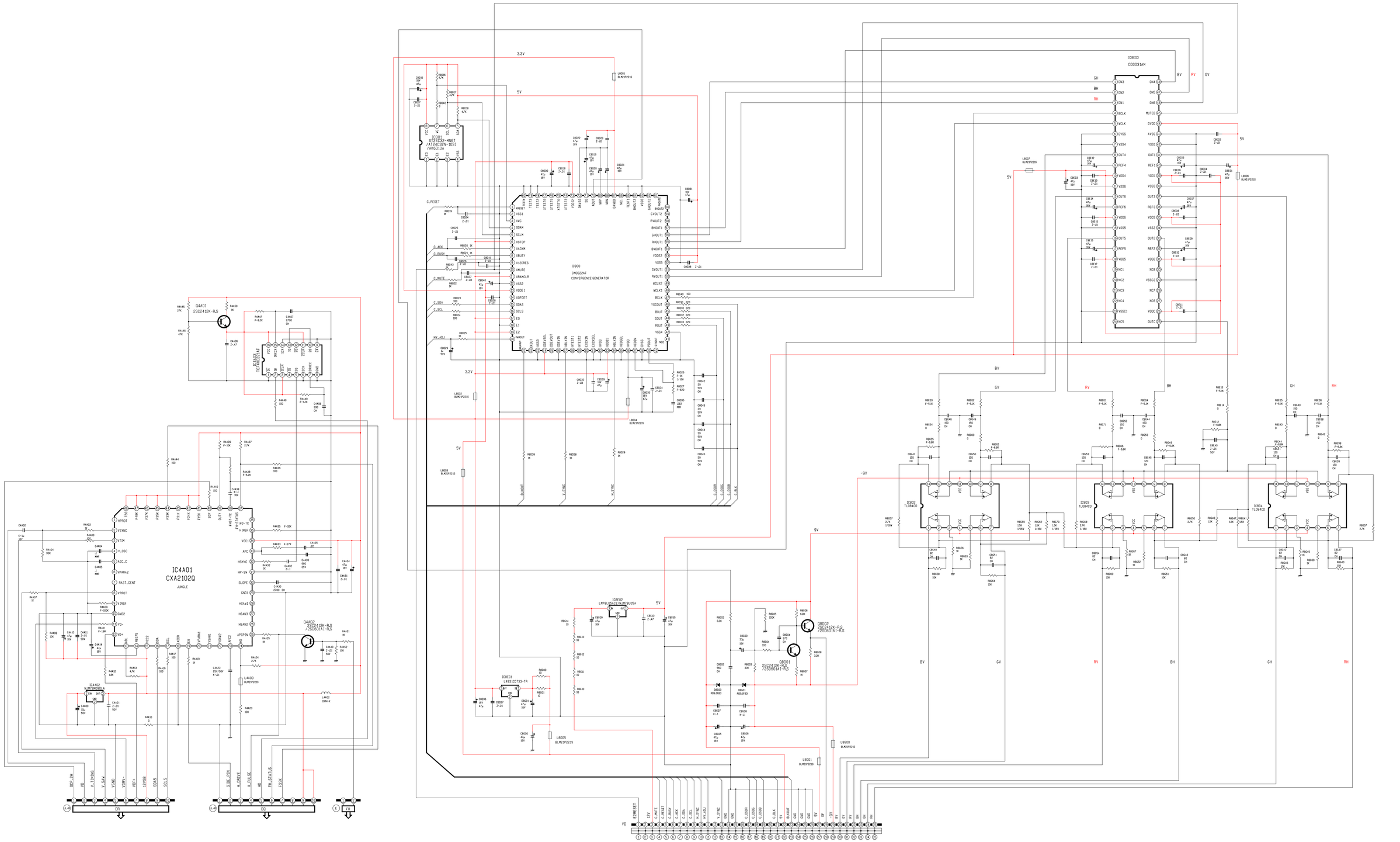
P6.1.... BLOCK DIAGRAM
P6.2.... MAIN
P6.3.... POWER
P6.4.... TERMINAL
P6.5.... SIGNAL-1 (AV I/O)
P6.6.... SIGNAL-2 (MICRO)
P6.7.... SIGNAL-3 (VIDEO/CHROMA)
P6.8.... SDYC
P6.9.... CONV GEN/JUNGLE
P6.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
P6.11.. DOUBLER-1 (IN)
P6.12.. DOUBLER-2 (MAIN)
P6.13.. DOUBLER-3 (OUT)




| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | | |
| 2 | WS-55611 | | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 | |
| 4 | WS-73711 | | | | |

CONTENTS


PG.1.... BLOCK DIAGRAM
PG.2.... MAIN
PG.3.... POWER
PG.4.... TERMINAL
PG.5.... SIGNAL-1 (AV I/O)
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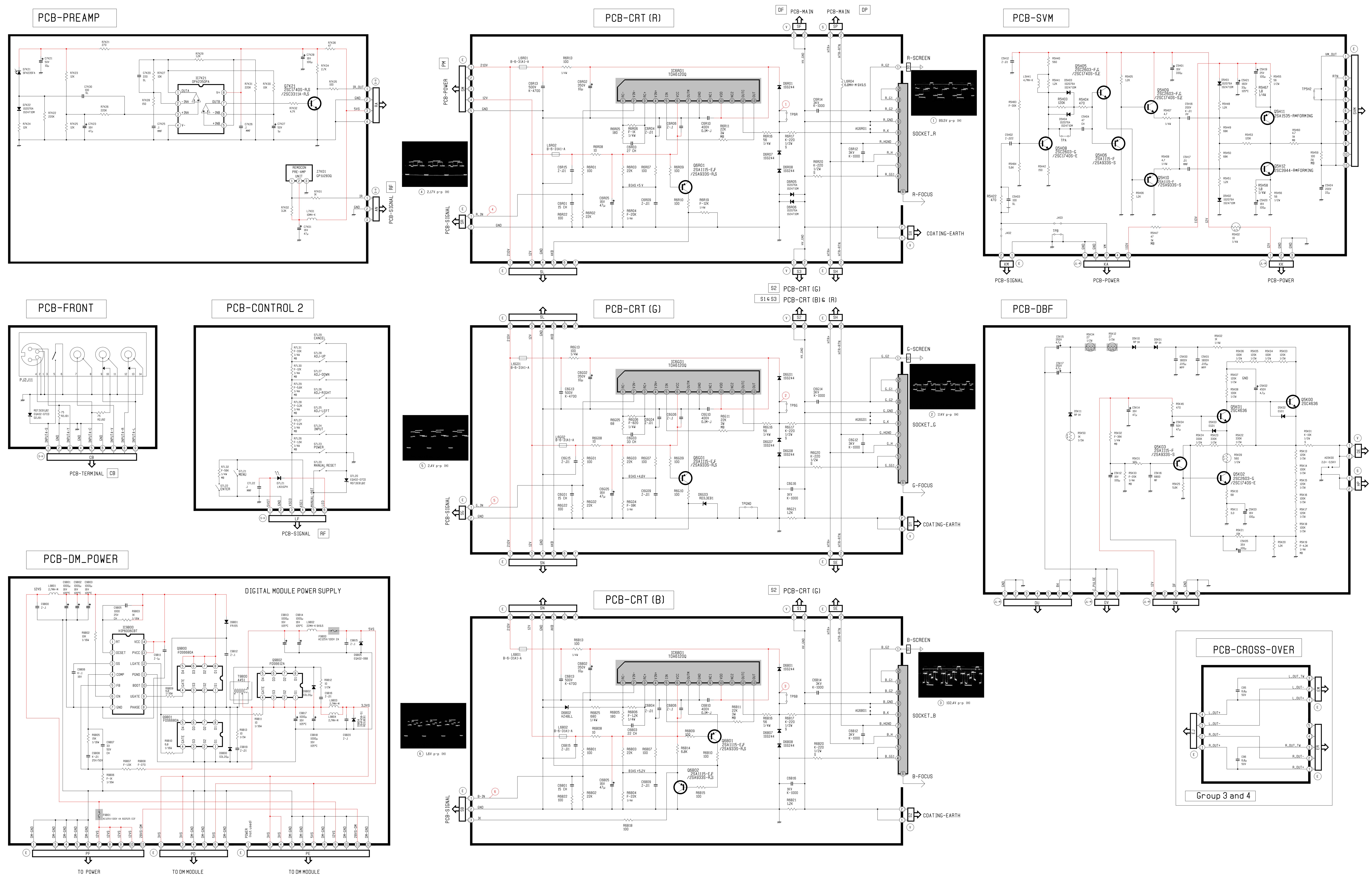
PG.12.. DOUBLER-2 (MAIN)
PG.13.. DOUBLER-3 (OUT)

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PG.1.... BLOCK DIAGRAM
PG.2.... MAIN
PG.3.... POWER
PG.4.... TERMINAL
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PG.13.. DOUBLER-3 (OUT)


| GROUP | MODEL | | | |
|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | |
| 2 | WS-65611 | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-B55 |
| 4 | WS-73711 | | | |

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J K

PCB-SIGNAL

EA

SUB-Y
GND
SUB-CB
GND
SUB-CR
GND
SUB-H
GND
SUB-V
GND
3.3V
3.3V
GND
5V
GND
MA IN-Y
GND
MA IN-CB
GND
MA IN-H
GND
MA IN-V

SHD
SYD
MHD
MVD

MAIN-Y
MAIN-CB
SUB-Y
SUB-CB
SUB-CR
MAIN_HD
MAIN_VD
SUB_HD
SUB_VD
3.3V
5V

Q7000 2SC2413K-Q
Q7001 2SC2413K-Q
Q7002 2SC2413K-Q
Q7003 2SC2413K-Q
Q7004 2SA1037K-Q
Q7005 2SA1037K-Q
L7000 14MHZ SMD
L7001 14MHZ SMD
L7002 14MHZ SMD

Q7010 2SA1037K-Q
Q7011 2SC2413K-Q
Q7012 2SC2413K-Q
Q7013 2SC2413K-Q
Q7020 2SA1037K-Q
Q7021 2SC2413K-Q
Q7022 2SC2413K-Q
Q7023 2SC2413K-Q

Q7E00 2SC2413K-Q
Q7E01 2SC2413K-Q
Q7E02 2SC2413K-Q
Q7E03 2SC2413K-Q
Q7E04 2SA1037K-Q
Q7E05 2SA1037K-Q
L7E00 14MHZ SMD
L7E01 14MHZ SMD
L7E02 14MHZ SMD

Q7E10 2SC2413K-Q
Q7E11 2SC2413K-Q
Q7E12 2SC2413K-Q
Q7E13 2SC2413K-Q
Q7E20 2SC2413K-Q
Q7E21 2SC2413K-Q
Q7E22 2SC2413K-Q
Q7E23 2SC2413K-Q
Q7E15 2SA1037K-Q
Q7E25 2SA1037K-Q

IC7000 TC74HC4066AFN
IC7E00 TC74HC4066AFN

IC7001 IC7002 IC7003 IC7E01 IC7E02 IC7E03 ADS931E

IC7010 IC7011 IC7E10 IC7E11 TC74AC157FN

M-Y
M-CB
M-CR
M-CLAMP
M-ADC
S-Y
S-CB
S-CR
S-CLAMP
S-ADC
S-MPX

3.3V
5V
ASV

PCB-DOUBLER-3

M-CLP
MY0 MY1 MY2 MY3 MY4 MY5 MY6 MY7
MC4 MC5 MC6 MC7 MC0 MC1 MC2 MC3
M-MPXCLK
M-ADCLK
SY0 SY1 SY2 SY3 SY4 SY5 SY6 SY7
SC4 SC5 SC6 SC7 SC0 SC1 SC2 SC3
S-MPXCLK
S-ADCLK
S-CLP

| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WI-48511 | | |
| 2 | WS-65611 | | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 | |
| 4 | WS-73711 | | | | |

CONTENTS


PG.1.... BLOCK DIAGRAM
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PG.3.... POWER
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PG.7.... SIGNAL-3 (VIDEO/CHROMA)
PG.8.... 3DYC
PG.9.... CONV GEN/JUNGLE
PG.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
PG.11.. DOUBLER-1 (IN)
PG.12.. DOUBLER-2 (MAIN)
PG.13.. DOUBLER-3 (OUT)




× EXCEPT WHERE NOTED, ALL OPEN-ENDED CIRCUIT PATHS CONNECT TO THE TERMINAL-2 SCHEMATIC

IC7H02
TMC57127PPM

IC7H07
SLA4028F3N

IC7H03
M5M534D31E-KKTS-K

IC7H09
TC74HC17007AF

IC7H11
TC74AC157FN

IC7H12
TC74AC157FN

IC7H13
TC74AC157FN

IC7H14
TC74AC157FN

IC7H00
NT56V16516AGT-7

IC7H01
NT56V16516AGT-7

IC7H04
MS1795/18FP

IC7H05
TC74HC221AF

IC7H06
TLC2932IPW

IC7H08
TLC2932IPW

Q7H1D
2SC2412K-Q

Q7H6D
2SC2412K-Q

X7H01
12007519Y
32.000MHz

D3.3V
A5V
D5V

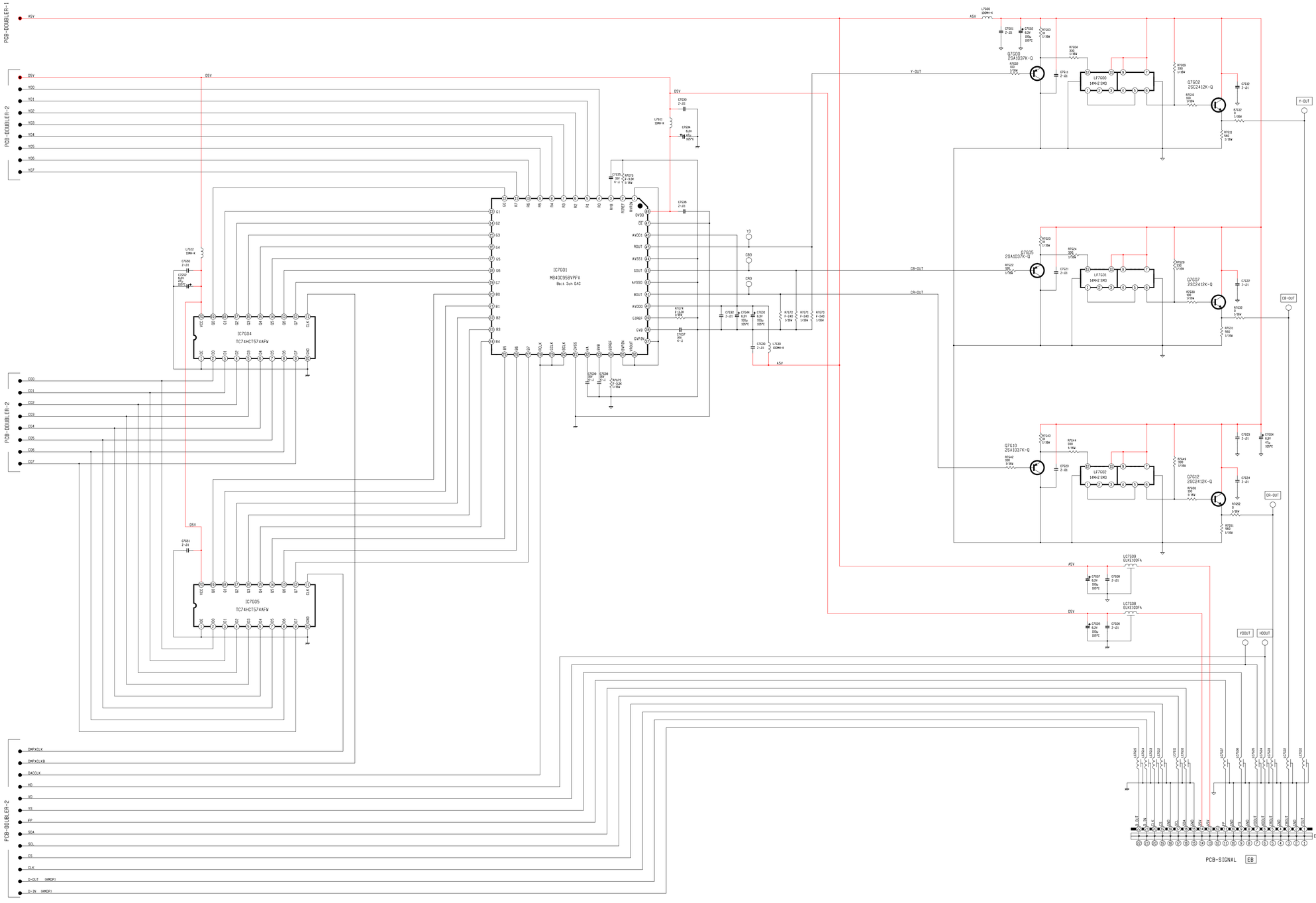
CONTENTS


P5.1.... BLOCK DIAGRAM
P5.2.... MAIN
P5.3.... POWER
P5.4.... TERMINAL
P5.5.... SIGNAL-1 (AV I/O)
P5.6.... SIGNAL-2 (MICRO)
P5.7.... SIGNAL-3 (VIDEO/CHROMA)
P5.8.... 3DYC
P5.9.... CONV GEN/JUNGLE
P5.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
P5.11.. DOUBLER-1 (IN)
P5.12.. DOUBLER-2 (MAIN)
P5.13.. DOUBLER-3 (OUT)


| GROUP | MODEL | | | | |
|---|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | | |
| 2 | WS-65611 | | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 | |
| 4 | WS-73711 | | | | |



* EXCEPT WHERE NOTED, ALL OPEN-ENDED CIRCUIT PATHS CONNECT TO THE DOUBLER-1 SCHEMATIC




| GROUP | MODEL | | | |
|---|---|---|---|---|
| 1 | WS-55511 | WS-65511 | WT-48511 | |
| 2 | WS-65611 | | | |
| 3 | WS-55711 | WS-65711 | WS-65712 | WS-855 |
| 4 | WS-73711 | | | |

CONTENTS


P6.1.... BLOCK DIAGRAM
P6.2.... MAIN
P6.3.... POWER
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P6.6.... SIGNAL-2 (MICRO)
P6.7.... SIGNAL-3 (VIDEO/CHROMA)
P6.8.... 3DYC
P6.9.... CONV GEN/JUNGLE
P6.10.. CRT/CONTROL/FRONT/PREAMP/DM POWER
P6.11.. DOUBLER-1 (IN)
P6.12.. DOUBLER-2 (MAIN)
P6.13.. DOUBLER-3 (OUT)